VOL. 118 January, 1956 NO. 1

MILITARY MEDICINE

ORIGINAL ARTICLES

Authors alone are responsible for opinions expressed in their contributions

Our New President

REAR ADMIRAL WINFRED P. DANA, Medical Corps, United States Navy, was elected President of our Association at the business meeting of the 62nd Annual Convention held in Washington, D.C., November 9, 1955.

Admiral Dana was born in Chicago, Illinois, on December 11, 1895. He attended public schools in Tacoma, Washington, where he graduated from high school. Then he attended the University of Washington in Seattle, The College of Puget Sound, Tacoma, Washington, and the University of Oregon College of Medicine in Portland. He received the degrees of Bachelor of Science (1917) and Doctor of Medicine (1919) from the University of Illinois. Admiral Dana practiced medicine in Tacoma, Washington, until September 1923 when he was commissioned as a Lieutenant, junior grade, in the Medical Corps, United States Navy. He was advanced to the rank of Rear Admiral April 1, 1949.

Early in his naval career Admiral Dana manifested an interest in aviation medicine and his studies in that field qualified him as a Flight Surgeon in 1925, after which he was assigned to the USS *Wright,* flagship of Aircraft Squadron, Scouting Fleet. In 1927 he was ordered to the Naval Air Station, Hampton Roads, Virginia, where he served until 1931 when he was ordered to duty with the First Marine Brigade, Port au Prince, Haiti.

In 1933 Admiral Dana was on duty at the Naval Air Station, Lakehurst, New Jersey, where he remained for two years, after which he spent a year at the University of Pennsylvania Graduate School of Medicine pursuing a course in internal medicine. He was subsequently assigned to the USS *Enterprise,* aircraft carrier, and in 1940 joined the medical staff of the Naval Academy, Annapolis, Maryland.

During World War II Admiral Dana served on the USS Bunker Hill and at Naval Air Stations in Florida and at Quonset Point, Rhode Island. In 1946 he was assigned to the staff of the Commander Air Force, Pacific Fleet. In 1948 he reported to the Bureau of Medicine and Surgery, Department of the Navy, as Director of the Research Division, where he served two years and then was assigned to the staff of the Chief of Naval Air Training, Pensacola, Florida. After a short tour of duty in 1952 as the Chief of Planning, Joint Action Program, Armed Forces Medical Policy Council, Office of the Secretary of Defense, Admiral Dana was assigned as Assistant Chief of the Bureau of Medicine and Surgery for Aviation and Operational Medicine with additional duty as Assistant Chief of Bureau for Research and Medical Military Specialties.

Admiral Dana is a member of the American College of Physicians, and the fraternities Phi Beta Pi and Alpha Omega Alpha. Mrs. Dana was the former Miss Mary Russell Stubbins of Atlanta, Georgia. The Danas have one son, William, and a daughter, Winifred.

Admiral Dana brings to the Association the experiences of many years of military life which will be of inestimable value in the office of President.

Association President's Address*

By

MAJOR GENERAL JOSEPH I. MARTIN, MC, *U. S. Army*

IN BEHALF of the Officers of the Association, I want to bid all a hearty welcome and especially to extend cordial greetings to our Brother medical officers from foreign shores, who are present as our Convention guests. We know that during your stay here we will mutually gain much. One of the outstanding accomplishments of our annual conventions has been the cementing of lasting ties of friendship and understanding among the military medical men of our several nations.

It is with sincere humility that I stand before you to report the state of the Association as your 63rd President. There are many reasons for my sentiments, not the least of which is the insignificance of my contribution to the Association in contrast with the achievements of my illustrious predecessors in office. My assignment in Europe for ten months of the year seriously limited my usefulness and had it not been for the magnificent work of the Executive Council and the various committees of the Association, nothing worthwhile would have been accomplished. Another reason for my feeling stems from the fact that our Association, which for some years has not been in the best economic health, has shown but little improvement in that respect during my tenure of office.

Our limited financial status has developed primarily because of our failure to attract and to retain an adequate number of members. Several reasons for our lack of growth are readily found. One that is often expressed suggests that our Association has outlived its usefulness and that it has no place in these modern times. I disagree with that viewpoint. In fact, I hold that not only are its objectives modern but that there is greater need for the Association today than in the past. A brief analysis of our object and purposes will bear me out. Our constitution states: "The object of the Association shall be to increase the efficiency of its membership by mutual association and by the consideration of matters pertaining to the medico-military service of the United States, both in peace and war." The December 1931 issue of the *Military Surgeon* magazine contains the best reference I have found concerning the purposes of the Association. I will quote from that record only those purposes pertinent to this discussion:

"The Association of Military Surgeons was organized for the purpose of advancing the knowledge of military surgery, medicine and sanitation in the Medical Departments of the Army, the Navy, the Public Health Service, and of the militia of the different services so as to enable them better to care for the sick and wounded soldiers and sailors of our country.

"Its purposes are purely patriotic.

"Its most valuable agency in this work is the publication of a monthly magazine which is the only unofficial publication in this country devoted to the specialty of military medicine.

"Military medicine is a distinct specialty which is quickly forgotten by the medical profession of our country in time of peace and this magazine keeps alive a knowledge of this specialty in peace and keeps it up to date by its contacts with the medical service of other Governments."

It is abundantly evident to me that the original object and purposes of the Association are still valid and are of extreme importance to national security today. Why, then, does our Association, with its laudable aims, fail to attract sufficient members? There are

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* Presented at the opening session of the 62nd Annual Convention of the Association of Military Surgeons of the United States, Washington, D.C., November 7, 1955.

many reasons. Americans, traditionally and honestly, abhor war, even to the extent of avoiding association in peacetime with the activities of war-making agencies. American antipathy to things military is inbred and expressed in many ways, openly and covertly. The majority of our citizens have demonstrated repeatedly since Civil War days that they do not choose to serve their Nation in uniform under conditions less than those critical to the survival of the Union. I feel that the challenging, and oftentimes antagonistic, attitude of individuals and of organized groups of medical men towards military medicine can be partially explained on that basis. Current unpopularity of military medical service is evidenced by the fact that since 1950, and for the first time in our history, we have needed a draft law to secure the necessary number of physicians and dentists for our military need.

Because our Association is the only organized body of medical men and women dedicated solely to the cause of American military medicine, we should be able to do more than any other medical group to improve the attitude of the medical profession towards military medicine. Our efforts in this endeavor in the past few years have not been rewarding. But I believe in view of military developments, which pose terrific danger to our people, that we now have a new approach to the interest and civic responsibility of all members of the medical professions and to the whole matter of active medical participation in national security.

The forty years from 1914 to 1953 have been correctly termed "the bloodiest period in the world's history." Many of our young medical men and the public have been led to believe that we in America have solved all of the medical problems of war because of our vast experience during that era, coupled with the many recent advances made in curative medicine. That misconception also tends to restrain interest in our specialty and in our Association. We in uniform know that there remains much for all to learn about war medicine. To the many unsolved problems of the past, we must now add the gigantic ones of future wars which will make the loss of blood in the past pale into insignificance. The real and immediate challenge to American medicine and particularly to this Association lies in those unsolved problems.

New military methods and means for waging war have ushered in a completely new and different military era in which the limitations of the term "military action" have been enormously extended. So, too, have the limits of "military medicine," which must complement and support all military action, been extended to cover every feature of community and industrial life in America. This new terrifying threat to life and limb in the United States, even though its potentialities stagger our imagination, is not invincible and it can be checkmated successfully by the establishment of an adequate medical care program for war. All peoples today, regardless of location or status, are liable to sudden direct acts of war with inescapable human carnage. The weapons of World War II brought to civilian communities in many countries in Europe and the Far East widespread destruction and masses of casualties. Those were definitely "military" casualties because they were inflicted by a military act of an enemy. Further, they were no different in character than those incurred by men in uniform on the battlefield. What medical care those noncombatants received was rendered not by trained military medical personnel but by individuals of the local civilian medical profession. I feel safe in predicting that the number of casualties among non-military populations in future major wars will be markedly increased over past experience and further that their medical care, if it is to be adequate, will demand the expert practice of military medicine by local civilian medical groups. Although our civil defense administration is working towards this goal it must be recognized that basically the problem remains one of military medicine. Essentially then, all doctors of medicine must be prepared to practice war medicine on a minute's notice.

All of these things add up to make the new demands posed by modern military medicine. We can meet those demands, insure proper preparedness and achieve future victories in military medicine only by educating and training all of our present and future physicians in that subject. In assessing the requirements for that training let us make sure that we avoid the common error of the day in assuming that the practice of military medicine consists solely in the treatment of trauma.

In addition to achieving their part in the training of physicians, all of our Federal medical services must assume a more prominent role in the development of more and better knowledge in our special field and also in the dissemination of old and new knowledge to the profession and to the public. Our Association, and especially our magazine, will continue to provide the best available medium for dissemination of the written word in military medicine.

Probably the best appeal for continued support of our organization is found in its record. It clearly shows how it has played a vital role for over sixty years in raising the standards of military medicine to an ever higher plane. In view of present uncertain international conditions and the enormously increased demands of modern military medicine, its prime importance to the medical military preparedness of our Nation cannot be questioned.

The need for military medical preparedness in our Nation is often challenged by the insidious words of subversives or by those who blithely suggest that we will win future wars without injury to American citizens. War may be fought in the future without human carnage, but no one has been able to explain, as yet, how that will be accomplished. Until someone does explain that neat trick satisfactorily, I caution that we be wary and keep our medical powder dry. Neither will our day see the outcome of war settled by machines alone. Automation, the use of business machines, or other robot devices, by themselves, will never provide a substitute for trained human beings in providing medical care for the individual or for the masses.

One cannot review our military history without being impressed with the evidence of our individual and national medical unpreparedness as we entered each of our several wars. The reason for that recurring deficiency has been the ingrained apathy and indifference of our people to the danger of national oblivion through enemy military action. The apathy and indifference heretofore was nurtured by three of our experiences in past wars. First, our vast national potential was always capable of correcting our initial military shortcomings after a war had commenced; second, our isolation guaranteed freedom from war damage; and third, we had an unblemished record of victory in all of our wars. There is no need to inform this group that the first two of those factors have been eliminated because of modern weapons and, as a result of our last military effort in Korea, there might be some question of a break having occurred in our hitherto-unbroken chain of victories. As we act to meet the current challenge to our national survival, there can be no room for apathy, for indifference, or for further gambling on insufficient military preparedness.

Our national policy of joining other free nations in military alliances is demanding an ever-increasing amount of medical attention. For example, a NATO handbook which seeks to standardize the early treatment of war casualties will be published very soon in appropriate languages. The increasing international interests in military medicine definitely point up the need for an extension of our Association's efforts.

Another relatively recent, important change in modern military medical practice and organization has been the inclusion in them of the many medical ancillary skills and services. The composition of our Association's membership is testimony to that and I believe it is only fitting that the Association afford these groups just recognition, both in

its organizational structure and in the use of our magazine. The latter is especially indicated as some of those groups have no national periodical reserved for the literature of their specialty. The fine reception and support given by the Nation's medical supply and equipment firms to our sustaining membership program have been of immeasurable help to the Association. It has been the most significant factor in our progress of the past year.

Because of the present composition of our membership and of the possibility that a more suitable title might prove more appealing to prospective members, one might validly question the appropriateness of our Association's name. Time was when the entire membership consisted of medical officers. Our founders and their successors for many years had gained wide experience in military surgery and properly named the Association when it was founded in 1891. Today, surgery is only one of the many specialties of military medicine. The term "surgeon" as used today in military and other organizations is likewise incorrect. That term has not been changed because of custom, its traditional value, and mostly because of the lack of a better title. So, too, it is exceedingly difficult to conjure up a title for our Association which would be exactly expressive of the now broadened base of our membership and the extensive scope of modern military medicine. It is my opinion that our present title, although not strictly correct, should be retained if for nothing else than its traditional value.

Although the Association has had its ups and downs throughout the year, in the long run it has been able to make some progress. The colossal task of keeping the monthly magazine coming off the press and the day-to-day business of the Association have been accomplished by an over-worked Secretary-Editor. We have been totally dormant in representing our membership and our cause in public and other forums, even when the interests of military medicine were at stake. That failure reflects our economic plight, which prohibits our sustaining a full-time staff necessary to accomplish many desirable projects. A large and active membership is absolutely essential to establish the financial capacity necessary to increase the tempo and spread of our activities. We can achieve that increase in membership only through the *active* support of the chiefs of all of our Federal medical services and the personal efforts of every member of the Association. I appeal to all of you to increase your efforts in securing new members.

In order to increase our Association's effectiveness, we must emphasize in our programs for the coming years several other matters which I consider are not only vital to the life of our Association but also will enhance its attractiveness.

We must attain closer assimilation of our efforts with civil defense medicine.

We must obtain greater utilization of our magazine by all of the Federal medical services.

We must actively represent military medicine whenever and wherever indicated to make secure its essential position in the future of American medicine.

We must increase our public information efforts to establish our identity as that segment of American medicine which is dedicated to the single purpose of improving national medical preparedness.

We must give serious thought to the advisability of sponsoring an educational program of military medicine in all of our medical schools.

We of this medical generation, who by the grace of God follow in the footsteps of the founders of this Association, are well qualified by the experience of three recent wars to speak and work authoritatively for the cause of military medicine. Our founders made their voices heard in legislative, and other forums, to make possible our Nation's leadership in military medicine. It is no less our responsibility today, in these perilous times of tension, to make known our cause by the same methods.

If we, today's medical soldiers, can meas-

ure up to the standards of those who have led the way, we may justly enjoy the accolade given by General Preston Brown in his address before our 1924 Convention, when he said: "You represent a noble profession, and the best of it, for the finest men are those who serve their country on the field of honor." Ladies and gentlemen, the field of honor *now* encompasses our homes and communities.

The theme selected a year ago to highlight the Convention Meeting, "The Care of Mass Casualties," seemed a vital one at that time. Its importance has increased during the year, and I feel sure that as the scientific program unfolds you will be pleased to note the extent of progress already made in this critical area of medicine. It is our hope that the stimulus will emerge from this Convention to marshal all of the medical forces of the Nation in a concerted effort to provide in the near future adequate medical preparedness, so essential to the defense of our birthright and country.

In closing, I want to express my appreciation and gratitude to all of our members for their fine support and cooperation; to the Executive Council for carrying the burden of directing the Association during my absence in Europe; to our Secretary-Editor for his magnificent day-to-day efforts; to the sustaining members; and to the chairmen and members of the many committees who have worked so hard and so long to make possible this 62nd Annual Convention of our Association.

Wire Message to President Eisenhower Sent at Opening of Association's 62nd Convention

Hotel Statler,
Washington, D.C.
November 7, 1955

The President of the United States,
Fitzsimons Army Hospital,
Denver, Colorado.

The Association of Military Surgeons of the United States, on the eve of its sixty-second annual meeting, extends warmest greetings to the President of the United States.

It is gratifying to the membership to note your continued improvement reported daily from Denver. May it continue to be progressive and the gain noted each day be permanent.

Military surgeons are mindful of the deep interest you have always taken in their problems. Your long and enthusiastic support of military medicine is looked upon with appreciation and pride.

We wish for you a full and speedy recovery that you may be enabled to continue your duties and may have a long life in which to enjoy the results of outstanding service to the United States.

Joseph I. Martin
Major Gen., M.C., U. S. Army
President.

The President's Reply

THE WHITE HOUSE
WASHINGTON

Denver, Colorado
November 8, 1955

Dear General Martin:

I am grateful to you and to the members of the Association of Military Surgeons of the United States, for your message of greetings. Quite naturally I much appreciate the sentiments you express.
To all of you, my profound thanks and warm regard,

Sincerely
Dwight D Eisenhower

Major General Joseph I. Martin, USA
President
Association of Military Surgeons
Washington, D.C.

The 1955 Wellcome Prize Essay

Surgical Treatment in Abdominal Trauma: A Comparison of Results in War and Peace

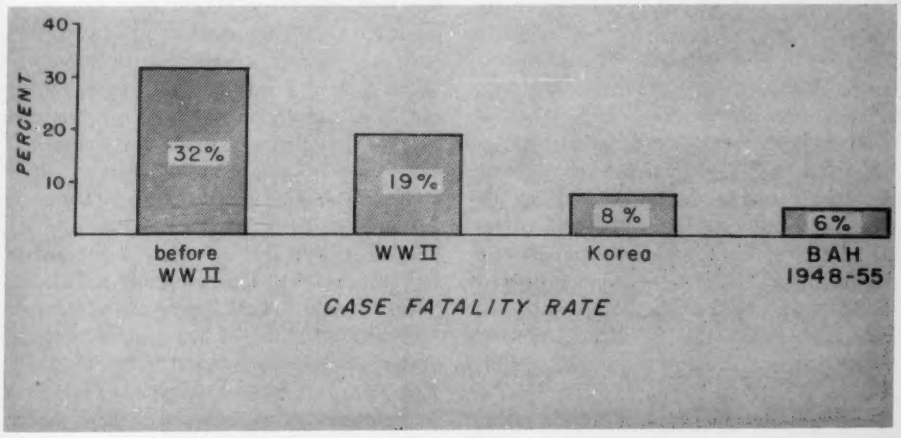
By

COLONEL WARNER F. BOWERS, M.C., *U. S. Army**

STATEMENT OF THE PROBLEM

PROBLEMS concerning the early treatment of shock and methods of reducing the elapsed time between injury and definitive treatment remain as the most important aspects in further lowering of the case fatality rate from abdominal trauma. The over-all military case fatality rate for abdominal injuries (Table I) before World War II was about 32%, while figures for World War II† show a 19% rate as compared to about 8% in Korea. Partly, this decline in mortality is due to a general improvement in the level of surgical care and a wide acceptance of the promulgated policies of surgical management. Other pertinent factors are the earlier and wider use of antibiotics, earlier and more generous use of blood and other resuscitative measures, and certainly in Korea an additional, very important factor was the quicker pickup of the wounded with earlier transportation to a hospital for definitive care. Those who talk about the splendid results in Korea always must add that many circumstances there were highly favorable and we may not be able to duplicate that record again. Nonetheless, it is important to analyze the data, recognize the points of improvement and plan adequately so that next time the results will be at least equally as good. Although only 6 to

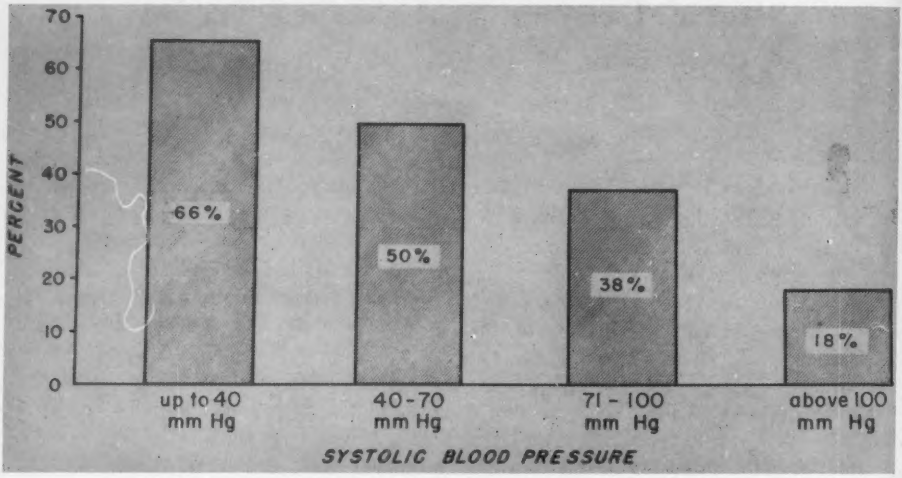
TABLE I. CASE FATALITY RATES FOR ABDOMINAL INJURIES



* Chief, Dep't. of Surgery, Brooke Army Hospital, Brooke Army Medical Center, Fort Sam Houston, Texas.

† In this paper, figures quoted for "World War II" essentially represent the experience of the Second Auxiliary Surgical Group in 1945, and figures quoted for "Korea" represent the experience of the 46th Mobile Army Surgical Hospital. These units are quite typical of the over-all experience and therefore as nearly as possible represent the average result. Both sets of figures have official confirmation. Figures reported for "Brooke Army Hospital" represent all cases of abdominal trauma seen between 1948 and July 1955, no effort having been made to "select" cases.

TABLE II. CASE FATALITY RATE CORRELATED WITH ADMISSION BLOOD PRESSURE
(2nd Auxiliary Surgical Group—World War II)



9% of war injuries involve the abdomen, 85% of these penetrate the peritoneal cavity, necessitating a major exploration which is expensive in time, personnel and equipment. Furthermore, 75% of abdominal injury cases have concomitant injuries, 25% of these being open fractures or amputations. Almost half (42%) of the patients who die of acute abdominal trauma die of blood loss and shock, while only a fourth (27%) die of pulmonary complications, peritonitis or associated injury. The close correlation between shock as evidenced by blood pressure drop and case fatality rate is shown from the World War II figures of the Second Auxiliary Surgical Group in Table II. This clearly indicates the necessity for the earliest possible correction of blood volume deficit by whatever means available. In the wounded man, blood loss and consequent shock is a progressive and continuing phenomenon so that elapsed time from wounding to definitive care assumes great importance. This is shown in Table III which compares this time interval in World War II as contrasted with the figures from Korea. Obviously, the saving of almost three hours between time of injury and time of operative repair is of extreme significance in the end result. Correlated with the earlier pickup and evacuation is the earlier initiation of blood volume replacement. The Surgical Research Team from Korea report that in their experience all of the abdominal injury cases had been given at least one unit of Dextran before getting to the hospital and about half had received a pint of blood in addition. In resuscitation in the hospital, it can be anticipated that half of the total blood used will be in resuscitation and the other half during and immediately postoperative. Again, the Surgical Research Team experience was that in the first twenty-four hours, pre- and postoperatively, abdominal injury patients received an average of 3500 cc. of blood, the thoraco-abdominal cases an average of 3000

TABLE III. TIME FACTOR IN ABDOMINAL INJURIES

	World War II	Korea	BAH
Time from injury to admission	5.6 hr	3.1 hr	
Time from admission to surgery	3.4	3.2	
Time from injury to surgery	8.9	6.3	3.5

cc., and the colon-rectal cases 2500 cc. These figures are quoted to indicate the tremendous quantities of blood needed if a low mortality rate is to be maintained. In case of mass casualties, these requirements will mount to astronomical totals.

Mechanisms of Injury

Correct diagnosis, accurate evaluation, and proper treatment in cases of abdominal injury are facilitated by a good understanding of basic mechanisms in pathological physiology. Essentially, there are five mechanisms by which abdominal viscera may be injured: (1) Anteroposterior or lateral squeezing due to a direct blow may result in crushing of a viscus between the instrument of force and the spine. (2) Tangential force may move a viscus beyond its limit of mobility, thus tearing its mesentery or pedicle. (3) Sudden compression of fluid or gas in a single loop may cause rupture. (4) Missile or bone fragments may rupture or penetrate hollow or solid viscera. (5) Fall from a height may injure viscera by shattering or tearing. Diffuse trauma is most apt to injure the liver, spleen, full bladder, pancreas, and vessels, while localized trauma is more dangerous for the intestine and kidney.

Physiology of the Peritoneum

Anatomically, the peritoneum is a serous membrane formed of a single layer of flattened mesenchymal pavement cells lining the abdominal cavity and covering the abdominal viscera, but functionally we must include the underlying lymphatics and blood vessels which are responsible for the important phenomena of secretion and absorption in which the peritoneum takes part. In health, the peritoneum serves entirely as a friction-reducing mechanism, but in disease its tremendous secretory capacity and its ability to absorb fluids and even particulate matter make it important in response to trauma. Lymphatic drainage is toward the chest, explaining why there often is pleural fluid above a subphrenic abscess or on the left after splenectomy. Rarely, if ever, does thoracic empyema cause ascitic accumulation.

The localization of peritoneal exudates is largely a function of gravity with pooling in the pelvis, lateral gutters, the lesser sac and the various spaces about the liver and diaphragm. Probably lymphatic drainage and peristaltic activity play a minor role in localizing exudates in the upper abdomen. Irritating liquid contaminants are absorbed only after having been reduced to isotonicity, and consequently, large amounts of fluid may be lost in this manner. Bile, especially, attracts fluid because of its high concentration, and the fluid loss here may be sufficient to cause death from shock. Development of peritoneal infection is partially a quantitative matter and mortality in abdominal injury depends on the following four factors.

1. Size and number of perforations
2. Level of perforation
   a. Fluidity of content
   b. Viability of bacteria
      (1) Time since ingestion of food
      (2) Level of perforation
   c. Chemical activity of content
3. Time intervening before therapy
4. General and local state of resistance of the host.

These factors are demonstrated clearly by making 1 cm. unsutured perforations at various levels in the gastrointestinal tract of the dog. The following case fatality results eventuate:

Empty stomach 7%	Ileum 100%
Full stomach 87%	Cecum 23%
Duodenum 81%	Left colon 23%
Jejunum 44%	Rectum 12%

Physiologic Basis for Symptoms and Signs

Abdominal pain is due either to chemical irritation of the peritoneum or to stretching of the wall of a viscus or pull on a mesentery. Peritoneal stretching may be caused either by distention of the lumen of a hollow viscus, edema within the wall, or sudden engorgement of a solid viscus. Rebound tenderness is due to sudden tension in the peritoneum after release of pressure and means underlying irritation. Most abdominal pain is interpreted as being at its point of origin

but the referred pain of the pancreas and gallbladder to the back, and of the diaphragm to the apex of the shoulder is well known. Paralytic ileus is an attempt at protection, keeping peristalsis from spreading contamination, and paralytic ileus is not an absolute situation but rather it varies from reduced peristalsis to complete cessation of intestinal motion. The motionless bowel usually is painless even if markedly distended because only with peristaltic activity is there sufficient pressure built up to cause sudden peritoneal distention. Rapid distention is painful; slow distention is not. Any foreign substance causes some peritoneal irritation with edema and consequent pressure on sensory endings. The intensity of the pain is correlated with the severity of the reaction and this in turn is related to the chemical activity of the contaminant. Air and blood cause the least peritoneal reaction and urine is almost innocuous, in spite of teaching to the contrary. Ureteral injuries rarely are diagnosed until urine is seen coming from the incision some days later, without either pain or fever. On the other hand, bacteria, bile, hydrochloric acid, and pancreatic juice cause moderate to severe peritoneal reaction and pain, probably in the order named. Some general idea as to the type of contamination may be gained from the severity of the reaction.

Relation of Wound Ballistics to Abdominal Trauma

Missiles produce their damaging effect by transmitting some or all of their kinetic energy to the tissues through which they pass. Since the kinetic energy of a missile is directly proportional to its velocity, it follows that wounding power also is proportional to velocity. As the missile traverses tissue, the energy is expended in all directions so that a large temporary cavity is formed by the displacement of tissues. This cavity is of microsecond duration and is something like thirty times the diameter of the tract which remains immediately after the missile has passed. Pressure in such a cavity often reaches 1500 pounds per square inch and is sufficient to fracture bones even without contact with the missile itself. For purposes of easy comparison, it can be stated that a temporary wound cavity of baseball size leaves a residual tract of pencil diameter. Missiles which remain in the tissues do so because they have expended all their energy, while those which pass through a part obviously have sufficient energy left to be able to continue on their path. A soft fragmenting missile increases the wounding effect and fragments of bone may themselves become secondary missiles. Hollow viscera may rupture secondary to the abrupt changes in gas pressure without actual perforation by the missile. Spongy viscera such as lung and hollow viscera are damaged least by the temporary cavity phenomenon, while solid tissue such as muscle and liver or spleen behaves like a fluid system and is damaged most severely. Tissue viability is dependent upon an intact, adequate blood supply, and tissue death following missile injury usually is due to impairment of blood supply rather than to damage to individual cells. This explains why the relatively thick-walled small bowel with rich blood supply can be treated by primary suture, while it is hazardous to so treat the thin-walled colon with relatively scanty blood supply.

Wound contamination in missile injuries is by three distinct mechanisms. First, the "punching" action of the missile may carry foreign bodies into the depths of the wound. Second, the "splashing" action of the temporary cavity formation may spread foreign material widely in the tissues. Third, the "sucking" action may draw material into the wound, even from the site of exit of the missile.

Important Elements of the History

From what has been said thus far, it is evident that there are several important elements in the history which may have a definite bearing on subequent treatment. First, it is essential to know the time of injury and as much as possible of the attending circumstances such as character of the trauma (blunt, gunshot, stab impalement, fall, crush,

etc.), relative velocity of the missile (rifle bullet, grenade fragment, flying glass, etc.), time since last ingestion of food, location of pain and type of pain (constant, crampy, severe, moderate, etc.), and previous treatment (tourniquet, morphine, blood, etc.). These points can be ascertained quickly during the physical examination and should not delay examination, resuscitation or definitive therapy.

Physical Examination of the Injured Abdomen

Presuming that the state of consciousness and the respiratory and circulatory status have been evaluated, the injured abdomen is inspected for obvious wounds. Sometimes a bruise on one side of the point of missile entry may indicate the direction taken. Again, points of entry and exit give some indication of possible injury. With obvious wounds, operative exploration is mandatory and further physical examination is needed only to evaluate concomitant injuries. In abdominal injuries without penetration or in low chest penetrations where abdominal viscera may have been damaged, additional physical examination is necessary, sometimes repeated over a period of time to evaluate progress. Palpation to evaluate rigidity and rebound tenderness, percussion to show tympany or abnormal dullness, auscultation for presence and quality of bowel sounds, and rectal examination to evaluate or elicit tenderness, blood or pelvic mass all add important information. Occasionally, simulated trauma is seen or there may be marked psychic overlay in a bona fide case of abdominal trauma. Usually, a disparity between symptoms and reactions as compared to condition of the patient will make it obvious that simulation or exaggeration is present and the examiner can govern himself accordingly.

Ancillary Examinations and Tests

The patient with a penetrating abdominal wound needs an X-ray flat film of the abdomen. This is primarily to identify and localize missile fragments but in closed type injuries may be helpful also from the viewpoint of localizing distended loops, free fluid and air, or areas of density which may indicate such misadventures as rupture of the spleen. Examination of the urine for gross blood is necessary and the only other essential data are those relating to circulatory status as determined by blood pressure level, pulse rate and hematocrit determination. In closed abdominal injuries seen in fixed installations, occasionally a blood or urinary amylase determination may be helpful in suspected pancreatic injuries.

Triage and Priorities for Care

Rather than having to decide whether or not the patient has to be operated upon, the usual decision is which patients need priority treatment and which need resuscitative care before operation. In multiple wounds, those which hinder cardiorespiratory function, such as chest, neck, and maxillofacial injuries, must be managed first. Abdominal wounds take next priority while injuries of the brain and cord, extensive soft tissue wounds, genitourinary wounds, and injuries of the eye can wait their turn, provided that hemorrhage is controlled. Some military surgeons feel that extensive buttock and sacral wounds take precedence over abdominal injuries to avoid turning the patient after abdominal exploration. It is difficult to generalize on this point since obviously the patient may bleed to death into the abdomen while the posterior wound is being debrided.

Among abdominal injuries themselves, the patient with first priority for operation is the recent injury with good general condition, little bleeding, and no concomitant injuries. Second priority is accorded patients with severe injury by large fragments and those in shock. Here, blood replacement is first, and only after shock has been controlled is operation undertaken. The exception is the patient whose blood pressure does not respond to suitable replacement and if shock is not improved after two units of blood, severe vessel damage and/or retroperitoneal hematoma must be suspected, and

here operation immediately may be lifesaving. In third priority are those patients with a closed abdominal injury or a suspected abdominal perforation. These require observation, resuscitation and operation within six hours if the need develops. Patients with no priority for operation are the obviously fatally wounded, those in severe shock with advanced sepsis, those with multiple wounds, and patients seen first after eighteen or twenty-four hours. Obviously, such decisions are not as easy as they have been made to sound here but these several guiding principles are correct, whether the situation be in regard to battle casualties or mass casualties from some other cause.

Early and Resuscitative Care

Prophylaxis against abdominal injury includes keeping the belt tight in order to present a smaller target, and keeping the gastrointestinal tract relatively empty before combat. This is difficult because constipation is frequent. Another point, possibly of greater importance is to turn the back to a blast or detonation if there is sufficient warning, and still better, to fall prone in order to give maximum protection to the abdomen. In the event abdominal injury is sustained, nothing should be taken by mouth and protruding viscera should not be replaced but should be covered and protected by a massive dressing. Such a dressing covers the wound to prevent additional external contamination, prevents further evisceration, and protects viscera already protruded. A narcotic for pain, preferably given intravenously and administration of blood or volume expander to treat shock should come early in the resuscitative care. Antibiotic administration should be started as early as possible, proper records to show what has been done should be prepared and should be evacuated with the patient as early as possible so that abdominal operation can be accomplished within six hours if at all feasible. First aid and resuscitation overlap and cannot be separated since all therapeutic measures are continuous from injury to postoperative recovery. Before evacuation, vigorous abdominal wall bleeding should be controlled and the foot of the litter may be elevated to assist blood pressure and to promote the maintenance of an adequate dry airway. Catheterization to detect gross blood is important and all measures should be taken to attain cardiorespiratory stability. This includes an occlusive dressing to a sucking chest wound, aspiration of a pneumothorax and such procedures avoiding meddlesome measures and those which will make the patient non-transportable. Evacuation for operation within six hours is important and it must be stressed that the patient should not be moved from litter to litter during evacuation.

The Non-Penetrating Injury

In military practice, the non-penetrating or closed abdominal injury is rare but is much more common in civilian practice as a result of falls and auto accidents. Special points in diagnosis and management have been stressed elsewhere in this paper under pertinent subheadings. One additional factor needs to be discussed.

Blast Phenomena. Pulmonary effects of blast in air usually are more important than those relating to the gastrointestinal tract, whereas blast in water is less apt to affect the lung. The critical distance is four times greater in water than in air and the severity of effect varies inversely with the square of the distance. Symptoms depend somewhat on position so that in water, floating on the back is best, whereas on land, falling prone is preferable. Symptoms after blast in water include anesthesia of the legs, the urge to void and a sensation of water rushing into body orifices. After 45 minutes there may be cramps and abdominal pain, followed in 24 hours by vomiting and diarrhea. After five days, there may be soreness to rigidity and paralytic ileus. Gangrene or rupture of viscera may occur. Usually abdominal effects of blast are treated conservatively unless signs of gangrene or rupture supervene.

The Thoraco-abdominal Injury

Since World War II a change in concept has occurred so that no longer is the com-

bined thoraco-abdominal approach advocated but rather two separate incisions are used. The thoracic wound is important from the standpoint of embarrassment of cardiorespiratory function or severe hemorrhage. In either of these instances, the thoracic procedure takes precedence. In other cases, the abdominal exploration is done first and in many cases a suitable chest exploration can be done through the diaphragm, avoiding a separate thoracic procedure. Perforation of the diaphragm requires complete abdominal exploration and this cannot be done adequately through a thoracotomy incision. Therefore, in thoraco-abdominal injuries some patients require thoracotomy first followed by laparotomy, some require laparotomy followed by thoracotomy, some require laparotomy only, and probably it is safe to say that none require thoracotomy only.

The Penetrating Abdominal Injury

Preparation. After resuscitation from the standpoint of airway and shock, operative exploration in cases of abdominal penetration is indicated. Wide skin preparation in such a manner as to prevent additional peritoneal contamination, careful continuing attention to maintaining a blood pressure level above 90 mm. Hg, and an inhalation anesthesia without multiple drugs or complicated apparatus are basic requirements.

Incision and Closure. The longitudinal paramedian incision is distinctly to be preferred because it allows speed in opening and closing, lends itself to extension if needed, and provides adequate exposure. The missile wound should not be included in the incision but should be debrided separately. Transverse and subcostal type incisions are excellent in elective surgery but have no place in casualty cases. Similarly, tight layer closure is accepted for elective cases but in trauma cases where there are mass casualties or where patients must be moved shortly after operation, or where there is peritoneal contamination, tight layer closure simply tends to cause infection, dehiscence and postoperative herniation. Through-and-through closure with wire using rubber-tube boots or tying over a gauze roll, with or without intervening skin sutures, is accepted as best meeting the requirements of surgery for abdominal trauma. Management of loss of abdominal wall substance may be a serious problem sometimes solved only by a massive dressing, while at other times relaxing incisions and local flaps may be effectual. Occasionally tantalum mesh or other prosthetic substance may be needed later.

Exploration. In exploring the abdomen, some routine procedure is best in order to avoid missing areas of injury. First, points of hemorrhage should be located quickly and controlled by hemostats. If the liver is the site of hemorrhage, gauze pack pressure will control it while the rest of the exploration is completed. If the spleen is the point of origin of bleeding, it should be grasped in the left hand, compressed to stop hemorrhage, and not released again until the pedicle has been multiply clamped and cut. The retroperitoneal area must be inspected for bleeding as evidenced by hematoma, and the site of injury in the abdominal wall must not be neglected as a possible source of hemorrhage. As the exploration progresses, if perforations in hollow viscera are encountered, they should be grasped quickly by Babcock or Allis type clamps to prevent further spillage and to facilitate locating them again after the exploration is completed. Only then should closure or resection be done, because otherwise, if perforations are closed as they are located, it may be found eventually that resection of a bowel segment is indicated after time has been wasted in multiple closures before the entire situation has been comprehended. Areas of perforation most often overlooked are the posterior wall of the stomach, the cardia of the stomach, the retroperitoneal colon and duodenum, and the mesenteric border of the bowel. The old saying that perforations always are present in twos is not entirely correct because perforation of a knuckle of bowel or a tear at the mesentery may give just one perforation. The whole small bowel should be brought out onto the abdominal wall so that exploration and visualization can be complete from

end to end and including the root of the mesentery. No lesser exploration is entirely safe.

Stomach. In World War II the case fatality rate for stomach wounds was 41%, this being reduced to about 17% in Korea. One reason for this high mortality is the difficulty of locating perforations high on the cardia and into the lesser sac. Another factor is the high degree of chemical activity of gastric juice plus the continued contamination from fresh swallowed microorganisms. Simple layer closure of perforations of the stomach is all that is required.

Duodenum and Small Bowel. In abdominal injuries, there is a 37% incidence of small bowel damage and the case fatality rate of 30% seen in World War II was reduced to 13% in Korea. There is some variation in mortality rate as correlated with level of perforation, in general those areas where there is the greatest chemical activity (duodenum and high jejunum), or greatest bacterial content (terminal ileum) having the highest rate. In World War II, duodenum injuries were fatal in 56% of cases, while in Korea this figure was 41%. Small bowel perforations always are treated by primary closure or resection and anastomosis, never by exteriorization. This is because the relatively thick wall and relatively abundant blood supply make primary closure safe. Also, exteriorization produces all the problems of fluid and electrolyte loss which are difficult in civilian practice and intolerable in military practice. Resection should be done if the bowel is denuded of mesentery for six centimeters, or less if viability is evidently impaired. Resection also is indicated if a short loop has sustained multiple perforations. End-to-end anastomosis is preferred, by whatever suitable technique the operator favors. Closure of individual perforations is best done by an inverting stitch, although some advocate purse-string suture, clamp and tie technique, or covering by omentum.

Colon and Rectum. There is a 35% incidence of colon injury and the case fatality rate of 37% for World War II was reduced to 15% in Korea. Wounds of the rectum carried a case fatality rate of 30% in World War II as compared to 18% in Korea. Here again, there is a correlation between level of injury and mortality rate depending on fluidity of bowel content and viability of bacteria. The established policy of exteriorization for colonic wounds or primary closure plus a proximal diverting colostomy still holds. This is because the colon wall is very thin and its blood supply is poor. It therefore is very vulnerable to the concussive effect of missiles and primary closure fails in a high proportion of cases. All wounds of the rectum and many wounds of the perineum and buttocks require colostomy. Usually if the wound is less than half the diameter of the bowel the damaged bowel may be brought out as a colostomy, but more extensive damage requires primary resection and exteriorization of both ends. Cecostomy is a notoriously poor operation and rarely is indicated in trauma cases because of the poor drainage effected and because it essentially establishes an ileostomy with all its disadvantages. Wounds proximal to the hepatic flexure may be primarily closed leaving a temporary tube cecostomy if the damage is not extensive. Severe wounds of the cecum and/or ascending colon are best treated by resection with end to end anastomosis of ileum to transverse colon.

Colostomy, Establishment and Closure. A simple loop colostomy with incomplete bowel division is not satisfactory because it does not completely divert the fecal stream. Any technic which completely divides the bowel and separates the cut ends somewhat is suitable, provided that dressings are changed sufficiently frequently so that peristalsis in the distal loop will not draw feces into its lumen. The British type colostomy advocated in World War II, where the colostomy limbs are sutured together to form a spur, is no longer advised because it is needlessly complicated and make subsequent closure difficult. The colostomy never should be placed in the main incision and never should be brought out through the original wound of entry or exit. When the time for closure of the colostomy has arrived, an intraperitoneal

type procedure always is advocated and if there is much scar tissue, excision with end to end anastomosis is preferred.

Gallbladder and Bile Ducts. Cholecystostomy has no place in treatment of trauma, and removal of the damaged gallbladder is advised. Biliary tract damage calls for T-tube drainage and never for primary closure. In addition, a Penrose drain to the site of injury is indicated. Bile peritonitis need not be feared unless there is a continued leak of bile into the peritoneal cavity. One insult by a gallbladder of bile is well tolerated.

Spleen. Seven percent of abdominal injuries include fracture of the spleen and in only 2.3% of cases is this the sole injury. In World War II, the mortality from rupture of the spleen was 25% and this was reduced to 15% in Korea. In penetrating injuries of the abdomen, direct exploration makes the diagnosis, but in non-penetrating trauma the diagnosis is more difficult. Evidence of internal hemorrhage, as shown by lowered blood pressure and elevated pulse rate, left shoulder trap pain and a positive abdominal X-ray flat plate, tell the story. The positive X-ray findings are medial displacement of the stomach air bubble, exclusion of gas shadows of bowel from the left upper quadrant with depression of the transverse colon and splenic flexure, plus diffuse haziness in the upper left quadrant with possibly some elevation of the left diaphragm. The treatment is splenectomy as soon as the diagnosis is made. Continuing hemorrhage and the danger of secondary hemorrhage as the clot liquifies make temporizing too risky to be acceptable.

Liver. In 27% of abdominal injuries there will be liver damage and this carried a case fatality rate of 27% in World War II, reduced to 15% in Korea. All devitalized liver tissue must be removed because autolyzed liver is highly toxic. Furthermore, blood in the peritoneal cavity must not be used for autotransfusion because of probable contamination. Liver wounds may cease bleeding spontaneously, may bleed severely, and may bleed secondarily. Careful hemostasis is indicated by whatever means is effectual, from mattress sutures to fibrin foam, occasionally falling back on the crude method of gauze packing in unusual instances. A Penrose drain to the site of liver injury always is indicated and missiles should be removed if feasible.

Pancreas. Pancreatic injury is accompanied by severe pain, profound collapse, and often by an elevated blood and urinary amylase level. Case fatality rate in World War II was 58%, being reduced to 22% in Korea. Management is difficult but the aim is to stop hemorrhage and prevent leak. This may necessitate debridement, excision, inversion, reimplantation or combinations of these. Blood calcium may be low because it is bound in the calcium soap formed in the areas of fat necrosis. Subsequent development of a pseudo-cyst of the pancreas is a complication to be thought of in followup examinations.

Kidney. Rarely does the urologist treat abdominal trauma, and most urinary tract injuries occur as part of abdominal wounding, so that usually the general surgeon is implicated. The kidney is damaged in about 13.4% of abdominal injuries. In World War II, kidney injuries carried a 36.3% mortality, being reduced to 25% in Korea. Rarely does kidney damage require nephrectomy because of bleeding. Partial nephrectomy is indicated more frequently, but usually a highly conservative policy is rewarding. Extensive destruction of the kidney pelvis or the vessels at the pedicle is indication for nephrectomy.

Bladder. The bladder is perforated in about 5% of abdominal injuries, and the mortality was 30% in World War II, being reduced to 9% in Korea. The perforated bladder is treated by primary closure and insertion of a Foley type urethral catheter. This is a change from former teaching, and now a suprapubic cystostomy is advocated only when a Foley catheter is not available. Simple urethral catheters are not trustworthy in patients who may have to be evacuated soon after operation.

Ureter. Injuries to the ureter are so few and so infrequently recognized at the first operation that figures for incidence and mor-

tality are not available. Ureteral damage most often is unrecognized and shows itself by urinary drainage from the incision later. When recognized, the lesion should be dealt with by primary suture and a splinting ureteral catheter if damage is not too extensive, realizing that this procedure usually is not successful. The various ureteral transplants are not suitable emergency procedures and one often is faced with nephrectomy if the other kidney is not damaged. Ligation of the ureter, leaving the kidney in place, is recommended only in desperate cases where the patient's condition or the press of time prevent more definitive care.

Retroperitoneal Hematoma. This has been alluded to several times but one or two comments remain. First, early placement of tapes around the aorta and vena cava, proximal and distal, may prevent rapid exsanguination as the dissection progresses. Next, it must be remembered that the adrenal glands are of extreme importance in the bodily reaction to trauma and hematoma around them may impede their function with fatal result. Finally, tears in the vena cava or aorta are dealt with by primary suture repair, by vessel graft, or by ligation as a last resort.

Foreign Bodies. Whether or not to remove foreign bodies always poses a problem. Foreign bodies larger than a centimeter in diameter should be removed if they are accessible without undue damage to surrounding tissue. For example, a small, smooth foreign body deep in liver substance should be left in place. Jagged foreign bodies are more dangerous than smooth ones and those which lie in proximity to vital structures into which they may erode should be removed. Nonmetallic foreign bodies are more irritating and harbor bacteria so that their removal is desirable. Removal of foreign bodies always is secondary to the main consideration which is saving of life. Better to do a second operation on a live patient later than to complete the entire job at once on a patient who does not survive.

Burns of the Abdominal Viscera. Burns of the gastrointestinal tract may occur as a result of hot fragments penetrating the abdomen or due to burns on the eviscerated organs. Experience in this type of injury is scanty but may become much more common. Since the burn damage is progressive for a period of time rather than all damage being instantaneously sustained, it seems wise to advocate exteriorization of burned loops of bowel without opening and protected by vaseline gauze. Eventualities thus can be dealt with as necessity demands.

Wounds of Entry and Exit. Usually a large wound of entrance means high energy expenditure so that a small wound of exit may be expected. Conversely, a high velocity missile which expends little energy on the wound of entrance is apt to make a large defect at its point of exit. From what has been said previously in the section on wound ballistics, it is obvious that there may be wide destruction of muscle viability due to the temporary cavity phenomenon, even if fascia is left relatively intact. This means that fascial planes must be opened generously enough to permit excision of all muscle tissue which does not exhibit free bleeding on incision. Criteria of muscle contractility and tissue color are not as reliable as demonstration of adequate blood supply. Due to the danger of evisceration, the policy of leaving debrided wounds open for delayed closure does not apply to full thickness abdominal wounds. Peritoneal closure with loose closure of the remaining layers is suitable, sometimes a drain in the wall being indicated.

Battle armor still has a useful place in combat and this has been especially true in Korea where many wounds were from missiles of low velocity. Even so, it must be remembered that the armor may still transmit kinetic energy and thus itself may damage underlying tissue. This is obviated by placing an impact-absorbing layer beneath the armor. While battle armor is hot and somewhat heavy, soldiers feel that it is "better to wipe sweat than blood."

Postoperative Regime and Complications. Postoperatively, the abdominal injury patient should not be evacuated for five to seven days, narcotics should be used sparingly but as needed, nasogastric suction

should be continued until peristalsis has returned, intravenous fluids, blood and electrolytes should be administered according to the usual criteria of good surgery, antibiotic administration should be continued and proper records should be maintained. Postoperative complications include shock, secondary hemorrhage, wound infection, peritonitis, intestinal obstruction, wound dehiscence, paralytic ileus, abscess localization, fistula formation, and incisional hernia. These things having been enumerated, will not be discussed further as to management.

Brooke Army Hospital Series

Introduction. The last 100 consecutive cases of abdominal trauma treated originally at Brooke Army Hospital have been analyzed as completely as available data in the charts permit. This series extends back from July 1955 to include the last few cases in 1948 and all intervening cases. Table IV shows the yearly incidence and for clarity it should be stated that patients originally operated upon elsewhere and subsequently transferred to Brooke have been excluded. Also excluded were cases in which the abdominal wall was "slashed" but the peritoneal cavity obviously had not been entered and no laparotomy was performed. Included were all cases requiring laparotomy at Brooke Army Hospital, even though damage was found to be limited to mesentery or omentum. Also included were a few cases in which laparotomy was indicated because of the peculiar location or nature of the wound which made it impossible to determine whether or not the peritoneum had been penetrated. Included also were the multiple severe cases, dying within half an hour of admission or on the operating table.

Table IV. Abdominal Trauma by Year of Incidence

1955 to July 1	9 cases
1954	16
1953	14
1952	15
1951	13
1950	10
1949	20
1948	3
	100

Case Fatality Rate. In our 100 cases there were six deaths, giving a case fatality rate of 6%. Of these six patients, one died in 30 minutes after admission, one died on the operating table, two died on the day of operation, one in three days and one in six days. The patient who died on the operating table was a 22 year old Latin American male who had a thoraco-abdominal gunshot injury, came in with blood pressure of 80/50 and had injury of stomach, liver, pancreas, kidney, portal vein, splenic artery, and lung. The patient who died in 30 minutes without operation was a 58 year old white male from an auto accident with injury of spleen, kidney, ribs, femur, lungs, and had severe pulmonary edema on admission.

Age, Sex and Race. We treat a large number of veterans and dependents, which influences these factors. The average age in our series was 27 years with extremes at 60 years and 22 months. There were three children in our series aged 22 months, 1 year and 7 years. The two smaller ones sustained peritoneal penetrations by falling on a bottle and the older one was struck in the abdomen by a swing. As would be expected, 94% of our patients were male and only 6% female. The only white female was the 22 month old baby, and of the remainder 4 were Negro and one was Latin American. In the entire series, 38 patients were white, 32 were Negro and 30 were Latin American.

Prophylaxis. From a review of the time of day of the injury, the benefit of a curfew is clearly apparent. Eleven cases occurred between 2000 and 2200, thirty-three between 2200 and midnight, and fifteen between midnight and 0200. In other words, 48% of the cases in the past seven years have occurred between 10 P.M. and 2 A.M. Figured another way, an 11 P.M. curfew would have obviated 55% of the cases.

Wounding Agent. The type of local population sharply influences the kind of agents causing abdominal penetration. This is clearly shown in our series where a knife

caused 53%, gunshot wound 26%, automobile 15%, and miscellaneous 6%. In this miscellaneous group was the child struck by a swing, the two infants who fell on bottles, a man who fell, and another man who jumped from a second story window and was impaled on a chair rung. In only half of the cases of gunshot wound was the caliber recorded, but these figures show .22 caliber 10% of the total series, shotgun 4%, .32 caliber 4%, .45 caliber 4%, and .38 caliber and .25 caliber 2% each.

Wound of Entry. This point is not especially important except as it shows that 43% of the wounds were in the upper abdomen as compared to 16% in the lower abdomen and 41% were in other areas such as lower chest and flank. This explains our high incidence of spleen and liver injury, as will be shown later.

Operative Incision. We have stated a preference for the longitudinal incision in surgery of trauma and in this series 70% of the exploratory incisions were of the paramedian type. Left predominated slightly with 39%, right 30%, and one lower midline. Fifteen transverse incisions were used, primarily for cases in which rupture of the spleen or liver was the anticipated injury.

Shock. It was difficult to obtain data on the point but as nearly as could be determined only nine patients entered the hospital with a blood pressure below 100 mm. Hg systolic. Some patients received as little as 250 cc. of blood and this ranged up to 18,000 cc. in one case. The usual patient received 500 cc. of blood and few received over 1500 cc. Dextran, plasma and saline were used in amounts which are not of statistical significance.

Elapsed Time between Injury and Operation. From review of the records, it is possible to learn the time of injury and the time of operation, but time from injury to admission and admission to operation is not obtainable. However, the really important figure is that from injury to definitive operation which in our series was 9 hours and 15 minutes for the entire group. Also, there were 19 cases in which the patient was observed for variable periods before operation was undertaken. Most of these represent rupture of the liver or spleen with slow hemorrhage which was not manifest on admission. In these 19 cases, there was an average delay of 31 hours and 30 minutes between injury and operation. Removing these delayed hemorrhage cases from the group, we find that the patient with obvious need for operation got to the operating room 3 hours and 30 minutes after injury, well within the "golden period." This accounts in part for the low incidence of shock and the very low case fatality rate.

Viscera Injured. In five instances, laparotomy was done because of the peculiar location or character of the wound without finding evidence of peritoneal perforation. One case, for example, was a flank stab wound with hematoma in the mesentery of the descending colon but no demonstrable peritoneal perforation. In 20 cases the peritoneum was entered by the original wounding agent but laparotomy revealed only bleeding from mesentery or omentum. In a number of these, omentum was protruding from the wound of entry when the patient was first seen. One very unusual case was that of a patient in an auto accident, obviously thrown against the gear shift lever. He had localized dissolution of continuity of the abdominal wall except for the skin which was not even bruised. Physical examination and laparotomy showed subcutaneous loops of small bowel. In one instance the ureter was damaged and as is the usual story, this was missed at operation, showing up later as urinary drainage from the incision. In three instances operation was not accomplished for several days because delayed hemorrhage from the spleen was a slowly developing phenomenon. Table V shows the incidence of visceral injury in our series of 100 cases. These figures do not lend themselves to totaling because many patients had multiple organs involved and these are listed by organ and not by case.

Operative Treatment: Generally accepted policies of treatment were followed in most instances as discussed previously. In the small bowel injuries, most were treated by

TABLE V. INCIDENCE OF ORGAN OR REGION DAMAGE IN 100 CASES OF ABDOMINAL TRAUMA

Stomach		9%	Spleen	14	17%	Kidney	9%
Duodenum	1		Delayed	3		Bladder	3%
Jejunum	9	27%	Liver		18%	Ureter	1%
Ileum	17		Pancreas		5%	Diaphragm	7%
Ascending Colon	3		Gallbladder		1%	Chest Wall	19%
Transverse	1	9%	Adrenal Gland		1%	Concomitant Fracture	14%
Descending	3		Retroperitoneal		4%		
Sigmoid	2		Large Vessel		3%		

suture closure, up to 11 perforations being closed in one case. In only four instances was small bowel resection with end to end anastomosis found necessary. The three wounds of the ascending colon and one of the transverse colon were treated by exteriorizing as a colostomy. In the descending colon two were treated by colostomy and one by primary unvented resection which is not advised. Of the two sigmoid injuries, one was treated by suture and proximal colostomy while the other was treated in unorthodox fashion by primary closure. In this same patient there was small bowel resection plus closure of other small bowel perforations. Such isolated successes do not negate the policy of exteriorization for colon injuries. Of the 18 liver injuries, 9 were treated by suture, one by pack of unstated type, and one by fibrin foam. In the other 7 cases, the liver injury either was very small or had stopped bleeding and no therapy for the injury was necessary.

Complications. Including the patients who died and counting the patient who came in with paraplegia from the injury, 21 patients had 30 complications. Five patients had evisceration of the exploratory incision, two in 1953 and one each in three other years. The usual reason was wound contamination from the soiled peritoneum or the improper practice of using the wound of entry as part of the laparotomy incision. As mentioned elsewhere, the wound of entry and exit should be debrided and closed separately from the laparotomy incision. The three instances of thrombophlebitis were minor ones, usually due to trauma about an intravenous administration site. The four cases of pulmonary edema were terminal events in fatal cases and not due to fluid overloading, as nearly as can be determined. Table VI lists all the known complications, including those on the fatal cases. The pancreatic injury was a technical error at splenectomy, resulting in temporary fistula and causing one of the subdiaphragmatic abscesses.

Hospital Days. In the total series of 100 cases, there was an average hospital stay of 20.46 days. In the 17 cases wherein some complication developed, the average hospital stay was 61.47 days and in the 83 uncomplicated cases the average was 12 days.

SUMMARY AND CONCLUSIONS

Since almost half of the patients who die of abdominal injury are lost because of shock and blood loss, and since blood loss is progressive over a period of time, it is obvious that early resuscitation by blood replacement and early operation to stop the hemorrhage are of paramount importance.

TABLE VI. COMPLICATIONS IN 100 CASES OF ABDOMINAL TRAUMA

Pulmonary		13%	Infection		5%	Miscellaneous	12%
Atelectasis	5		Retroperitoneal Abscess	1		Hematuria	1
Pulmonary Edema	4		Subdiaphragmatic Abscess	2		Paraplegia	1
Bronchopneumonia	2		Pelvic Abscess	1		Premature Delivery	1
Pulmonary Infarct	1		Peritonitis	1		Pancreatic Injury	1
Hemothorax	1					Evisceration	5
						Thrombophlebitis	3

Correct diagnosis, accurate evaluation, and proper treatment are based on good understanding of fundamental mechanisms in pathological physiology. A brief review of some of these factors has been presented.

Operative technic has been discussed only insofar as it is necessary to help develop judgment and to assist in evolving a rapid, effectual procedure for exploration and repair.

Accepted policies for management of specific organ injuries have been presented with quotation of mortality figures from World War II and the war in Korea, based on experience of the Second Auxiliary Surgical Group during World War II and the 46th Mobile Army Surgical Hospital in Korea. An analysis of 100 cases of abdominal trauma treated at Brooke Army Hospital has been made to show a comparison of results in war and peace. Military surgery, in spite of unfavorable factors, compares favorably.

While the comments made herein are based on military experience, they would seem to be directly applicable to management of civilian accident cases whether they be in small or large groups.

UNPREDICTABILITY OF HEART CATASTROPHES

Having read the editorial on "Heart Catastrophes" in MILITARY MEDICINE for November 1955, I believe that the following brief case report will emphasize the fact that these catastrophes are frequently unpredictable by any means.

A prominent executive, about 45 years old, had been accepted for an insurance policy of $150,000. The policy had been written by the insurance company only after a most searching examination by three outstanding internists—one of whom was a prominent cardiologist. The examiners made their examinations independently of each other. I am convinced that no reasonable procedure was omitted to detect cardiovascular disease.

Six weeks after receipt of the policy the insured suddenly died at his desk. I performed the autopsy. There was no thrombosis of the coronary artery but the first portion of the left coronary was stenosed to less than half its original diameter by atheromatous changes, thus reducing the lumen to one-fourth its normal cross sectional area. In other words, there was a 75% reduction in the capacity of the left coronary artery to supply blood to the left myocardium. I have encountered similar findings in many coronary deaths. However, the meticulous examinations to which this man had recently been subjected dramatically emphasized the fact that negative cardiovascular surveys do not necessarily mean anything.

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Some Observations on Mumps

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DOUBTLESS in this enlightened Atomic Era no spectacular discoveries are to be anticipated from general studies of such familiar and rather prosaic infectious diseases as mumps, which is largely regarded as a fitter subject for humorists than for medical investigators. Nevertheless, studies of this nature may be peculiarly rewarding in that they furnish the practitioner with a convenient review of forgotten knowledge, and often a useful refutation of certain remembered facts (especially information of the "always" or "never" variety) which perhaps might better have been forgotten. In this manner they foster not only education and humility, but also a healthy distrust for textbooks, which with all their virtues are undoubtedly a fertile source of misinformation. With this justification the following observations on a series of patients with mumps are presented.

Clinical material. The clinical material consisted of 44 cases of unequivocal mumps occurring in military personnel and their dependents, who were admitted to the Communicable Disease Section of an Army general hospital between November 1953 and May 1954. Thirty-nine of the patients were males, and five were females. The age range was eight to 41 years, with a mean of 25 years. Most of the patients were military personnel in the third decade of life; rank ranged from private to major, with all intervening grades represented. In general rank conformed closely to the age distribution; fifty percent of the military patients were privates or privates first class.

Epidemiology. The number of cases of mumps admitted to the hospital monthly is presented in Figure 1. It will be noted that the peak morbidity occurred in January, and that the incidence was characteristically high throughout the first quarter of the year. The patients came from 21 different military units, representing all sections of the area served by the hospital. Although most units contributed only one or two patients, concentrations of cases did occur in two installations: namely, the Landstuhl Army Medical Center (with 14), and the 45th AAA Gun Battalion (with eight). The reason for the relatively high incidence in these areas was not apparent.

The postulated route of spread of mumps in the military communities in question (based on the incubation periods rather than on contact histories) is presented in Figures 2 and 3. The disease appears to have been introduced into the Landstuhl Army Medical Center by a Warrant Officer, who had undoubtedly contracted mumps from his son, the latter having developed the disease on 27 December 1953. From this "herald case" two chains of spread were started, with new cases appearing one or two at a time at inter-

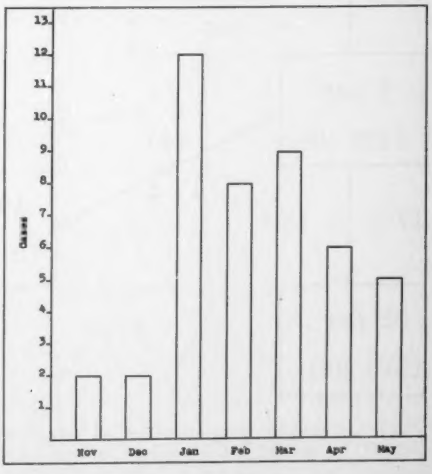

FIG. 1. Monthly case incidence of mumps.

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vals of 14 to 21 days. The outbreak ran its course in approximately 2½ months, no new cases having been hospitalized after 31 March. A somewhat similar mode of spread was observed in the 45th AAA Gun Battalion, except that here gaps in the chain of transmission occurred, the duration of which was about twice or thrice the usual incubation period of mumps, implying transmission by intermediate subclinical, atypical, or misdiagnosed cases.

The serial type of transmission of a communicable disease observed in these two military populations is most unusual, and is rem-

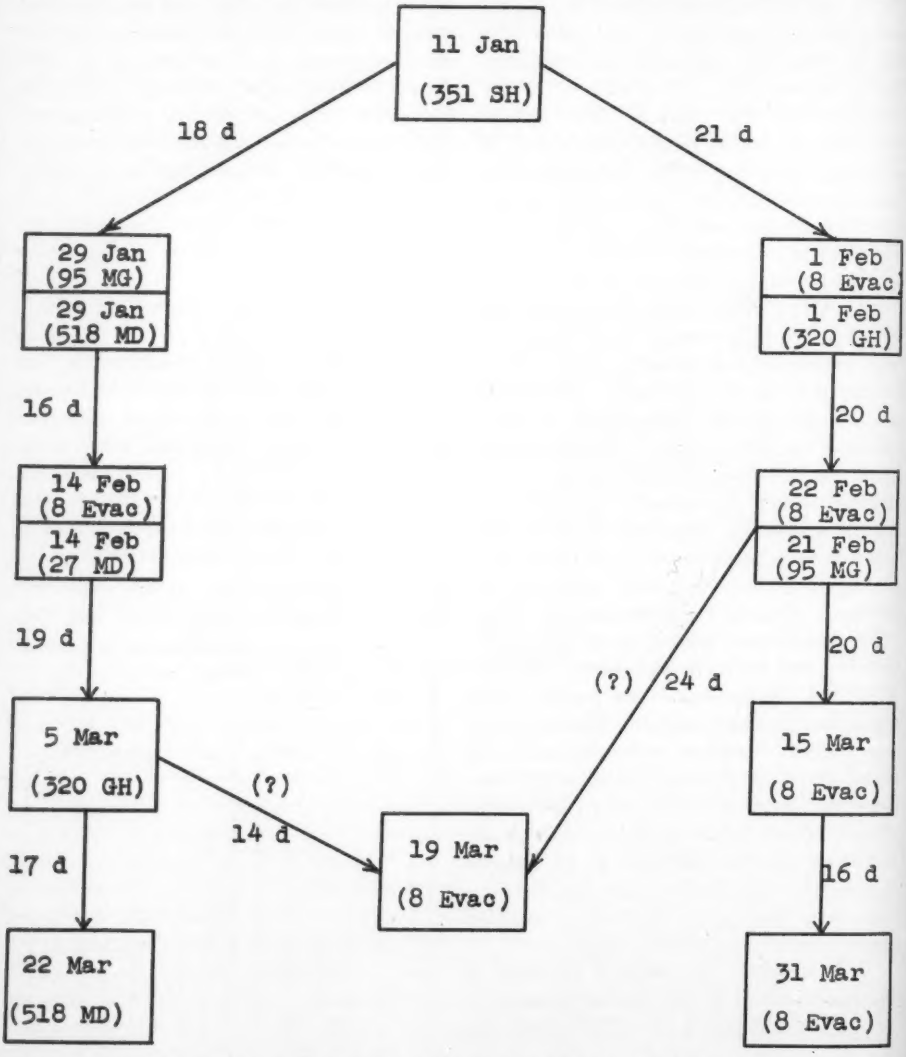

FIG. 2. Postulated mode of spread of mumps within the Landstuhl Army Medical Center. The date of onset of the disease and the military unit of the patient are shown. Intervals between cases are indicated in days.

iniscent of the singular mode of spread of infectious hepatitis.[1] Gaps in the chain equalling multiples of the incubation period have also frequently been observed in the latter disease.[2, 3] These phenomena may be explained by certain features which mumps and hepatitis have in common: namely, moderate infectivity, long incubation periods, a rela-

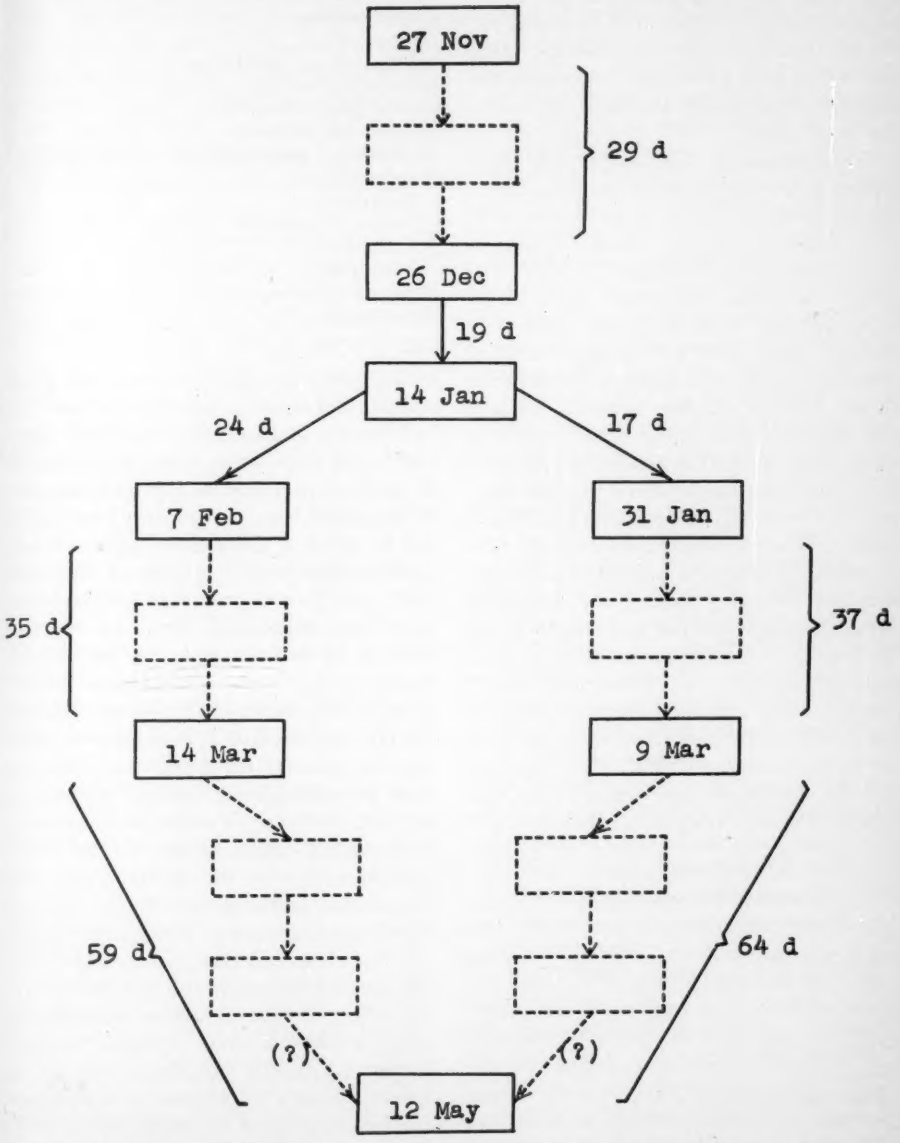

FIG. 3. Postulated mode of spread of mumps within the 45th AAA Gun Bn, showing dates of onset of recognized cases and time intervals in days. Broken lines indicate presumed intermediate cases which escaped clinical recognition.

tively high incidence of subclinical cases during epidemics, and a high ratio of immunes to non-immunes in the population. For these reasons outbreaks of both diseases tend to be slow and prolonged (as in the present instance) rather than explosive.

Only three of the present series had had a previous episode of mumps, supporting the impression that second attacks of this infection are a rarity.

Symptomatology. Symptoms had been present at the time of admission for an average of 2.7 days, with a range of one to 20 days. The presenting manifestations of mumps are shown in Table 1. Next in frequency to the rather obvious symptom of facial swelling came headache, crampy abdominal pain, and feverishness, each of which were present in about one-third of the series. Another common symptom complex was nausea and vomiting, which eight patients complained of at admission and seven more developed shortly thereafter, making a total of over one-third displaying these symptoms early in the course of the disease. The frequency of headache, abdominal pain, nausea, and vomiting among the presenting symptoms might lead one to anticipate a high incidence of two of the occasional complications of mumps: viz., meningoencephalitis and pancreatitis. In the subsequent course of most of these patients, however, these complications failed to materialize, and the basis for the complaints was found to lie elsewhere. The only symptoms with any degree of specificity proved to be salivary gland swelling and testicular swelling and pain.

TABLE 1
SYMPTOMS PRESENT AT ADMISSION

Symptom	Number of cases	Percent
Facial swelling	44	100
Headache	14	31.8
Abdominal pain	14	31.8
Feverishness	14	31.8
Nausea & vomiting	8	18.2
Stiff neck	6	13.6
Backache	5	11.4
Chills	5	11.4
Testicular symptoms	4	9.1

TABLE 2
PHYSICAL FINDINGS AT ADMISSION

Physical sign	Number of cases	Percent
Parotid swelling	39	88.6
Fever	32	72.7
Inflammation of Stensons duct	20	45.5
Submaxillary swelling	18	40.9
Cervical lymphadenopathy	18	40.9
Abdominal tenderness	14	31.8
Costovertebral angle tenderness	9	20.5
Gonadal signs:	7	15.9
Tenderness	4	9.1
Swelling & tenderness	3	6.8
Nuchal rigidity	5	11.4
Splenomegaly	4	9.1
Mammary tenderness	1	2.3
Hepatomegaly	1	2.3

Physical examination. Physical signs which were noted at admission are presented in Table 2. As might be expected, the most frequent physical findings were swelling of one or more of the salivary glands, fever, inflammation of the orifices of Stenson's ducts, and posterior cervical lymphadenopathy. The submaxillary gland was involved only about half as often as the parotid, though in four cases it alone was inflamed at admission, and in two patients it remained the only gland affected. Sublingual or lacrimal mumps were not encountered. One patient showed no glandular swelling whatsoever at admission, although inflammation of Stenson's duct and a stringy exudate issuing therefrom forecast the parotitis which appeared the following day. In ten cases the initial temperature was normal, demonstrating that even a relatively virulent infectious disease such as mumps can be present without fever. Abdominal and/or costovertebral angle tenderness were frequent findings, though the degree and distribution of the tenderness were not suggestive of pancreatitis. Inflammation of the orifices of Stenson's ducts (present in 45.5% of the patients) was noted more frequently than in some other series in the medical literature.[4]

Laboratory findings. A complete blood count, urinalysis, and chest x-ray were performed on all 44 patients at admission. The leucocyte count was unpredictable, varying between 4000 and 14,900, with a mean of 7392. Differential counts were largely normal. It is evident that in mumps this examination is of little or no use for diagnostic purposes. The urinalysis and chest x-ray were normal in all instances. No case of pneumonitis due to mumps was encountered.

The erythrocyte sedimentation rate was determined in six patients, but was elevated in only two. Electrocardiograms were obtained on 18 patients; only one was abnormal, showing a right bundle branch block which was probably unrelated to the disease. No evidence of myocarditis was detected. Because the thymol turbidity has been found to be elevated in certain other acute infectious diseases,[5] this test was performed at admission on each patient of the series. Values above normal were observed in 25 subjects (56.8%), the range being 5.2 to 14.2 Maclagan units, with a mean of 7.5 units. The cause of this phenomenon, which under certain circumstances could have obvious diagnostic significance, was considered to be alterations in gamma globulin attending the immunologic response to an acute infectious disease.[5] Other liver function tests carried out on a large sample of the series were mainly negative (Table 3), most of the abnormal values having occurred in a patient with hepatitis complicating mumps.

The behavior of the serum amylase and lipase in this group of patients was the subject of a separate study, the detailed results of which are reported elsewhere.[6] The amylase was found to be significantly elevated at admission in 36 patients, or 81.8% of the series, and the lipase in eight, 72.7% of the 11 subjects tested. With this high percentage of abnormality of these serum enzymes occurring early in the course of mumps, it is evident that these two tests have great diagnostic significance and offer appreciable aid in the evaluation of doubtful cases of this disease.

TABLE 3
RESULTS OF LIVER FUNCTION TESTS

Test	Number of determinations	Number abnormal
Bromsulfalein	4	1
Cephalin flocculation	26	1
Total serum bilirubin	26	0
1 ′ serum bilirubin	26	1
Alkaline phosphatase	13	3

Therapy. Patients with uncomplicated mumps were treated routinely with a regimen consisting of bed rest with bathroom privileges, warm alkaline aromatic solution mouth washes four times daily for the first few days, and analgesics as indicated. Most of the patients were reasonably comfortable on this simple management. Nausea and vomiting proved to be the complication which presented the greatest therapeutic challenge. Atropine sulfate subcutaneously in doses of 0.4 to 0.6 mg every four to six hours was the most effective agent used in combatting these symptoms, usually bringing them under control promptly and with lasting effect. The medication often had to be continued for several days; in a number of instances relapses followed its withdrawal, but these were promptly controlled by a resumption of therapy. Tincture of belladonna, dramamine, and sedation were relatively ineffective against these symptoms.

The seven patients with mumps orchitis were treated with diethylstilbesterol in a dosage of two or three milligrams orally three times daily. Although this therapy produced no apparent ill effects, the response of symptoms, fever, and physical signs was in no case dramatic, and serious doubt existed as to whether any benefit resulted from the medication. Excluding a patient whose confinement was prolonged because of another complication, the mean period of hospitalization for these patients was 17.3 days. Thus the prompt therapeutic response and marked shortening of the hospital stay noted by Hoyne et al.[7] in patients with mumps orchitis treated with stilbesterol was decidedly not

observed in this series. In contrast, two patients with mild testicular pain and tenderness but no swelling at admission were treated prophylactically with 0.5 mg. and 2 mg. respectively of stilbesterol three times daily, and neither of these developed definite orchitis.

One patient with particularly severe mumps involving both the parotid and the submaxillary glands bilaterally, who showed no improvement after ten days of routine therapy, was given a course of cortisone, receiving 25 mg. orally every six hours for four days, followed by 25 mg. orally every eight hours for another five days. After 24 to 48 hours of this treatment there was for the first time a noticeable diminution in the size of the involved salivary glands and improvement in local discomfort. The disease continued to resolve slowly on cortisone therapy, and the patient was ultimately discharged to duty on the 25th hospital day. Although his response while receiving cortisone was by no means dramatic and may well have represented only a delayed spontaneous recovery, its coincidence with the onset of therapy is considered sufficiently suggestive to warrant further trial of cortisone in severe cases of mumps.

Hospital course. Most of the patients with uncomplicated mumps showed a progressive improvement in symptoms and physical signs after being placed on bed rest. Nine, however, experienced spread of the infection to other previously uninvolved salivary glands, and several others developed complications, despite rest in bed. All patients were maintained at bed rest until swelling had disappeared completely from the involved glands, and were discharged from the hospital a day or two later. Since the mean period of hospitalization was 15.3 days, the average duration of glandular swelling was in the neighborhood of 13 or 14 days. The mean duration of fever was 4.3 days, with a range of one to nine days. A curious phenomenon observed in 11 (25%) of the patients was a secondary rise in temperature, usually in the form of a sharp spike, occurring between the fourth and seventh (mean 5.5) day of illness, lasting one to five days (mean 3.1 days). This secondary fever could not be correlated with changes in symptomatology, spread of the infection to other glands, appearance of complications, or other clinical findings, and its cause remained obscure. Several of the patients unaccountably developed brief relapses of fever, nausea, vomiting, and toxicity late in the course of the illness, when salivary glandular swelling had nearly disappeared.

Complications. The complications of mumps encountered are presented in Table 4. The most frequent and distressing complication was severe nausea, usually accompanied by vomiting, which was present in 15 patients. Although these symptoms were generally confined to the early active phases of the illness, they occasionally persisted or recurred as late as the third week of the disease, when inflammation of the salivary glands had nearly or completely cleared. They did not appear to be related to pancreatitis, orchitis, or other complications, and it was concluded that they probably reflected a specific enteritis caused by the mumps virus.[6]

Meningismus of varying degree was noted in seven patients, and on three of these spinal paracentesis was performed. One of the latter showed moderate elevation of the hydrostatic pressure with a normal cerebrospinal fluid; it was felt that this finding rep-

TABLE 4
COMPLICATIONS OF MUMPS

Complication	Number of Cases	Percent
None	26	59.1
Nausea and vomiting	15	34.1
Meningismus	7	15.9
Orchitis	7	15.9
Serous meningitis	1	2.3
Meningoencephalitis	1	2.3
Presternal edema	1	2.3
Mastitis	1	2.3
Hepatitis	1	2.3
? Oöphoritis	1	2.3

resented an acute serous meningitis. A second revealed elevated pressure, spinal fluid pleocytosis of 563 and increased protein, consistent with mumps meningoencephalitis. The patient, a 23 year old white Second Lieutenant, made a satisfactory recovery on symptomatic therapy and was discharged to duty on the 25th hospital day. For several weeks, however, he continued to experience mild intellectual impairment and light-headedness. In the third patient the cerebrospinal fluid was entirely normal in spite of the presence of intense headache, mental confusion, a recent syncopal attack, marked nuchal rigidity, and a positive Kernig's sign. In view of the fact that it has been repeatedly observed in mumps that spinal fluid evidence of meningeal involvement can exist in the absence of central nervous system symptoms and signs,[8, 9] it is of some interest that the reverse can also be true. Clearly meningismus complicating mumps is not in itself diagnostic of meningitis or meningoencephalitis, and the presence of these complications should not be considered as established until confirmatory findings have been demonstrated in the cerebrospinal fluid.

Orchitis occurred in seven patients (15.9%), an incidence comparable to the 18% which is said to be characteristic for this complication.[10] It was right-sided in four, and left-sided in three. In two patients it had its onset after three days of bed rest, and in another after four days of rest therapy. The failure of rest in bed to prevent mumps orchitis has been noted by others.[9] The mean serum amylase for this group of patients (306 units), did not differ significantly from the mean for the series as a whole (349 units), confirming the absence of a relationship between these two variables, as has been reported by other investigators.[11, 12, 13]

Presternal edema, which is present in about 1.2% of cases of mumps,[9] was observed in one patient in this series (an incidence of 2.3%). Hepatitis presumably due to the mumps virus manifested itself in one patient of the series, and will be reported in detail elsewhere. One female patient showed mild mastitis and questionable öophoritis. No unequivocal case of pancreatitis was encountered in this series, attesting to the rarity of this complication as noted by others;[9, 14] the source of the elevated serum amylase which is so frequently present in mumps undoubtedly is to be sought in other organs.[6]

Summary and Conclusions

Although mumps is commonly thought of as a benign childhood disease which is of no great moment in adult medical practice, it can become a formidable cause of morbidity in military populations. A total of 642 man-days was lost from duty by the 40 military patients in this series, and an inestimable amount of suffering was endured which in many instances exceded that seen in more lethal diseases. Mumps was a winter and spring disease in this community, with a peak incidence in January. A singular chain-like type of transmission from person to person was observed, which was strikingly similar to the characteristic mode of spread of infectious hepatitis, and emphasized certain common features possessed by these two diseases. Although the inflammation of the salivary glands rarely caused much inconvenience, certain ancillary symptoms such as nausea, vomiting, fever, headache, and abdominal pain were moderately disabling to prostrating in about one-third of the patients. Physical signs were remarkable only in that they were occasionally misleading; a relatively high occurrence of abdominal tenderness and nuchal rigidity was not attended by a correspondingly high incidence of pancreatitis or meningoencephalitis. Routine laboratory procedures were of little help from a diagnostic or prognostic point of view. Three tests did prove to have considerable diagnostic significance, though of a non-specific nature: the serum amylase, elevated in 81.8% of patients, the serum lipase, elevated in 72.7%, and the thymol turbidity, elevated in 56.8%. The latter tests, singly or in combination, should offer very material

aid in the diagnosis of doubtful cases of mumps. Therapy was of importance only in those patients with complications. Nausea and vomiting, while often severe, were usually remarkably well controlled with parenteral atropine. Stilbesterol in the recommended dosage did not appear to exert any beneficial effect on the patients with orchitis. In one patient with severe mumps treated with cortisone, the results were sufficiently promising to warrant further trial of this drug. Although the hospital course of most patients was benign, approximately one-third were severely ill and uncomfortable during the first few days on the ward. A curious feature noted in one-fourth of the patients was a secondary spike in temperature on or about the fifth day of illness, the cause of which was obscure. The most frequent complication was severe nausea and vomiting, present in over one-third of the series. These symptoms were felt to be due to a specific enteritis caused by the mumps virus. The incidence of other complications was similar to that reported in other series in the medical literature. An interesting observation was that of a normal spinal fluid in the presence of severe meningeal signs, demonstrating that meningismus in mumps does not necessarily imply meningitis, but may be simply a manifestation of high fever and toxicity. Hepatitis, an extremely rare complication of mumps, was encountered in one patient. In conclusion, the experience in this series again demonstrated that mumps, while rarely a cause of death, may be a decidedly serious disease in adults, particularly from the point of view of suffering, potential complications, and time lost from work.

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The Treatment of Mumps and Complicating Epididymo-Orchitis by Tetracycline Hydrochloride and Streptokinase

By

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AND
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(With one illustration)

MUMPS, a communicable disease of viral etiology, is characterized by a high incidence of severe and disabling complications in adults. Epididymo-orchitis, occurring in about 20 per cent of men affected after puberty, is usually unilateral although occasionally bilateral. In 224 patients with mumps studied by Candel[1] in 1945, 66 had an epididymo-orchitis of which 12 were bilateral. The complication usually was seen about five to seven days after the parotitis became evident. In rare instances, the epididymo-orchitis preceded the parotitis and in others, the orchitis was the only manifestation of the mumps. About 85 per cent of the patients had considerable involvement of the epididymis while about 15 per cent had minimal involvement.

The symptoms and signs of epididymo-orchitis, except for variation in intensity, are typical. Following a drop in temperature due to the parotitis, a rise is noted. The involved testis is swollen and painful. Tenderness may be extreme. Usually the symptoms and signs abate in about seven to ten days.

The inflammatory reaction in the testis is great in the connective tissue and less in the glandular tissue. The resistance afforded the swollen testis by the firm fibrous tunica albuginea may produce pressure necrosis of the seminiferous tubules. Fluid may accumulate also between the tunica albuginea and the tunica vaginalis to further contribute to the pressure upon the gland. Partial to complete atrophy of the testis results in about one-half of the patients but sterility seldom ensues.[2]

Treatment of epididymo-orchitis has included rest in bed, support of the testis, applications of ice to the affected area and drugs for the relief of pain. Aureomycin, terramycin and chloramphenicol have been used with encouraging results.

Surgical treatment for epididymo-orchitis has been directed toward relief of the pressure upon the edematous testicle. Mixon and Lewis[4] incised the tunica vaginalis to permit drainage of fluid. The tunica albuginea was not disturbed. A Penrose drain was kept in place for 24 hours. In a follow-up of 27 patients so treated the authors found atrophy in only one case.

With the discovery of a method for the reversal of the inflammatory reaction and the alleviation of edema by the injection of streptokinase intramuscularly,[3] it was of interest to determine whether the course of mumps and the incident epididmyo-orchitis could be affected. The inhibition of the inflammatory reaction and the alleviation of the edema in the testis should lead to a decreased incidence of atrophy of the gland. The mechanisms by which streptokinase is thought to produce these results have been reviewed elsewhere.[3]

The intramuscular injection of streptokinase must be accompanied by the administration of a chemotherapeutic or an antibiotic agent. The removal of the normal protective barriers in inflammation by streptokinase

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permits more effective action by the drugs since the inflammatory reaction apparently keeps the drugs in the circulatory medium from reaching the infective agents.

Since varidase contains streptokinase and streptodornase, it was important to learn whether a beneficial therapeutic effect could be obtained from the intramuscular injection of streptodornase. Streptodornase was dissolved in physiologic saline so that the final concentration was 10,000 units per cc. The solution was stored in the refrigerator when not being used. A fresh solution was made daily.

Varidase was used as the source of streptokinase since a pure preparation of streptokinase has not yet been made. The streptodornase in varidase can be disregarded for therapeutic purposes when used in this way. Varidase was dissolved in physiologic saline so that the final concentration of streptokinase was 10,000 units per cc. The solution was stored in the refrigator when not being used. A fresh solution was made daily.

Case Report

A 44 year old white man, admitted to the hospital on September 2, 1954, complained of a painful mass in the region of the left submaxillary gland of about five weeks' duration. Chills, fever and headache had been present for five days before admission to the hospital.

The temperature was 101°F. The left submaxillary gland was tender and about two times normal size. A mass about two cm. in diameter was present over the hyoid bone.

Diagnoses of an enlargement of the left

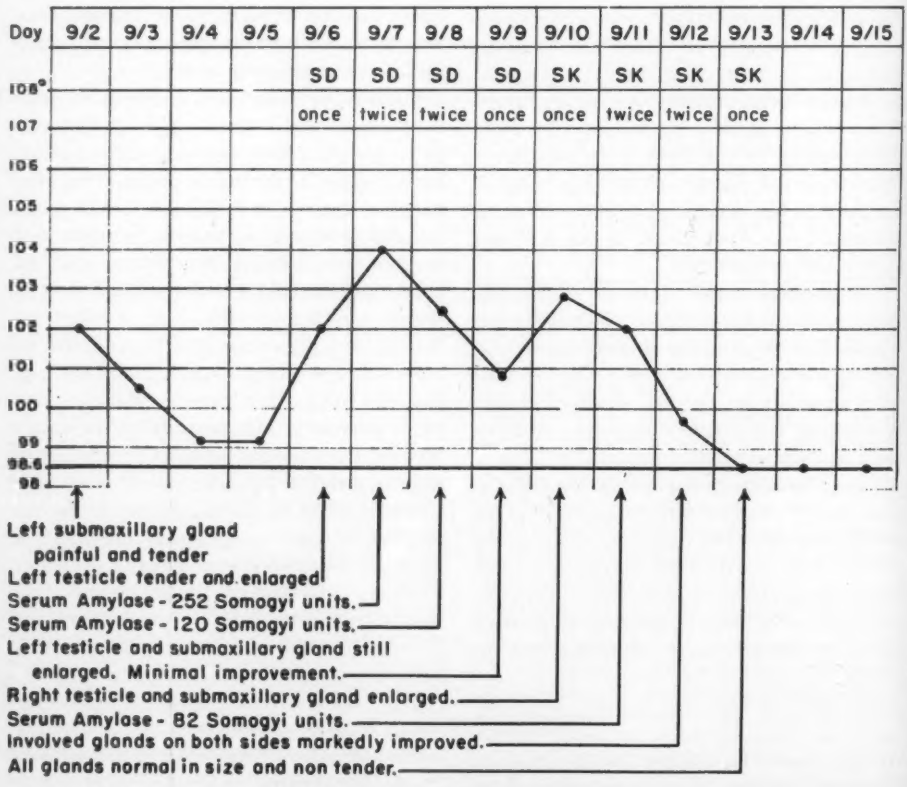

Fig. 1. Clinical Course of the Patient.

submaxillary gland of unknown etiology and a thyroglossal duct cyst were made. Achromycin (tetracycline), 0.25 grams, was given orally four times a day from September 4 through September 22. On September 6, the left epididymis and testis became very tender. At this time, it was suspected that the patient might have mumps. The hemoglobin, red blood cell count, white blood cell count and differential count were within normal limits. The serologic test for syphilis was negative. The urinalysis was within normal limits. Five thousand units of streptodornase in 0.5 cc. of physiologic saline were given intramuscularly two times a day for six doses from September 6 through September 9, 1954 without a good therapeutic effect. The serum amylase was 252 units on September 7 and 120 units on September 8. The left epididymis and testicle were still enlarged and severely tender on September 9. A slight decrease in size and some diminution in tenderness was noted on September 10. On the same day, the right submaxillary gland and the right epididymis and testicle each became enlarged to about two times normal size and tender. The complement fixation test for mumps was 1:8 on September 10.

Because of lack of therapeutic response with streptodornase, 5,000 units of streptokinase in 0.5 cc. of physiologic saline were given intramuscularly twice a day for six doses from September 10 through September 13. The serum amylase was 82 units on September 11. The temperature returned to normal limits on September 13. The size and the degree of tenderness of the submaxillary glands and the epididymes and testes decreased rapidly until, on September 13, these organs were normal (Fig. 1). The complement fixation test for mumps was 1:64 on September 22. The thyroglossal duct cyst was removed on October 11. Crystalline procaine penicillin G, 300,000 units, was given intramuscularly from October 11 through October 19. The wound healed uneventfully. The patient was discharged from the hospital on October 22.

Summary

Achromycin (tetracycline) did not produce the desired therapeutic result until streptokinase was given. It may well be that the achromycin did not reach the virus because of the barrier created by the inflammation. Streptokinase, given intramuscularly, by producing a modification of the inflammatory reaction and the absorption of edema, apparently aided in the treatment of the mumps and the complicating epididymo-orchitis. Further investigation of the phenomenon is indicated.

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Many motorists are attempting to crash the sound barrier but are only succeeding in crashing their skulls.

The Evaluation of a New Nasal Decongestant

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OBSERVATIONS made on the use of tetrahydrozoline hydrochloride in sixty individuals are recorded to show the effectiveness of this drug as a superior nasal decongestant.

MATERIALS AND METHODS

In the present series a one-tenth percent (0.1%) solution of tetrahydrozoline hydrochloride* was dispensed with droppers in 5 cc. bottles to the patients under observation. The subjects for the observation were 60 Air Force officers and enlisted men chosen at random upon their first report to the Flight Surgeon for upper respiratory infections with nasal congestion. Following the usual procedure, the men were placed on duty not involving flying for the course of the infection, and were seen again at daily or two day intervals until it was deemed advisable to return them to full flying duty. In the course of the follow up visits the patients were questioned concerning the effectiveness of the decongestant under study. The results obtained were compared with the subject's impression of the results of treatment in the past with other decongestants.

In this study the group used afforded an unusual opportunity for follow up studies inasmuch as:

1. Those being followed were on flying status, and return to this status from non-flying duty was of primary concern to the patient not only from a financial standpoint, but also from a standpoint of performance of duty. In relatively few other groups of population does a minor upper respiratory infection completely disqualify the individual from his performance of his primary duty.
2. All of the group has at some time in the past been placed on a status of duty not involving flying for similar complaints, and all of the group studied had used various other Air Force stock issue decongestants in the past. All of the individuals were able to draw a comparison between previous decongestants and the material for present study.
3. After removal from flying status, it was mandatory that the individual return to the Flight Surgeon's Office at regular intervals for reevaluation of his condition until it was deemed advisable to return him to flying status. Because of this, adequate follow up was assured in every case.

Inasmuch as respiratory infections are self limited unless complicated, and the course in a given individual cannot be predicted, it was deemed unwise to attempt comparison of various decongestants in the same individual during the same episode of congestion. Because of this, the memory of the individual and direct observation in the office were taken for the basis of comparison, and the evaluation of effect. The patients were instructed to place two drops of the solution in each nostril only when needed for the relief of congestion. He was instructed to time the duration of the response, and the need for his cooperation was stressed. Each patient was warned that he should be alert for side reactions of any nature, including drowsiness, headache, nausea, vomiting, local irritation, palpitation, epistaxis, or any other unusual symptoms or sensations. It was realized that the sensitization of the patient to possible side effects could precipitate an undue percentage of reactions, but it was felt that through this method the minor reactions could be more easily determined.

* Tetrahydrozoline hydrochloride nasal solution ("Tyzine"). Material supplied through the generosity of Thomas W. Guinivan of the Department of Clinical Investigation of Pfizer Laboratories.

On the first visit, the patients were examined with nasal speculum, following which they were sprayed with 2 cc. of a 0.1 percent solution of the decongestant under investigation. Inasmuch as the recommended dosage was 2 to 3 drops in each nostril, the spraying represented an overdosage of approximately ten times. Following the spraying, a patient was observed for any immediate effect and for side reactions while he remained in the office; he was again examined with the nasal speculum before release from the office. A bottle of the solution was then given him.

Results

The following table gives an overall evaluation of the opinion of the patients concerning the drops:

	Number of Cases	Percent of Total
Excellent	48	80
Fair	10	16.6
Poor	2	3.4

It is worthy of note that both of the cases reporting poor results were patients who complained primarily of acute sinusitis which had been aggravated by flying. The pain in these cases was due primarily to the rapid change of barometric pressure with altitude change, and after return to ground level the pain remained constant. The decongestant response as noted by nasal speculum on direct examination was as good in these cases as that observed in the other cases.

As mentioned above, the patients were questioned for comparison with the standard decongestant previously used in the office. The results of that comparison were as follows:

	Percent
Much better than previous decongestant	32.7
Better than previous decongestant	30.9
Slightly better than previous decongestant	18.2
No difference noted	14.5
Not as good as previous decongestant	3.6

It should be noted that the above comparison was made with respect to decongestant response only. Patients were advised that in the above comparison all other qualities of both decongestants were to be disregarded.

The immediate action of the decongestant was observed with the nasal speculum. All patients examined obtained immediate relief of congestion with spraying, and the observed response was similar to that obtained by spraying with ephedrine 1% solution. It was observed that during the course of the spraying, two patients had violent coughing for approximately twenty seconds after the spraying, and one complained of the taste. Inasmuch as the decongestant itself is tasteless, the sensation probably resulted from forcing debris out of the nasopharynx into the mouth. There were no other undesirable side effects noted before the patients left the office.

Duration of the effect of a single dose ranged from one-half hour up to eight hours. Twenty of the patients or one third of the group obtained relief for 3½ hours or less, 24 patients reported relief for 4 hours plus or minus ½ hour, and 16 patients obtained relief for periods up to 8 hours on a single dose. The average duration of relief for all patients was 3.9 hours.

Maintenance of therapy with prolonged period of treatment was obtained in 57 of the 60 patients for the entire course of therapy. Three patients reported decreasing degree of response and shorter periods of relief from congestion after one or two days of therapy.

Side Effects

Four of the patients reported headaches after using the decongestant, but it was believed that these were associated with the respiratory tract infection in progress at the time. Three of these did not report a recurrence of the headache when they were tested with the decongestant as applied by spray in the office after the acute respiratory infection had subsided. One patient complained of severe drowsiness, and one reported nausea without vomiting which subsided after the drops were discontinued. There were no other untoward effects; there were no cases of palpitation, nervousness, or increased irritability.

Discussion

A perfect nasal decongestant for topical use on the nasal mucosa has been sought which would have the following properties:

1. Absence of side effects.
2. Absence of rebound phenomena.
3. Immediate and prolonged action.
4. Absence of local irritation.
5. Maintenance of response with continued long term therapy.

Topical decongestants used in the past have not fulfilled all of these requirements. Side effects are common, and are frequently observed, especially with inadvertent overdosage and the resultant effect of the sympathomimetic agent on the vascular system. Rebound congestion is frequently seen after use of a nasal decongestant, and has often been responsible for dependence upon the decongestant for maintenance of a clear airway even after the initiating cause of the congestion has been alleviated. Most of the decongestants in use at the present time afford immediate relief, but this relief is seldom maintained for periods over two to three hours. Local irritation is extremely common with the sympathomimetic drugs now in use. The indication is from the present investigation that tetrahydrozoline hydrochloride closely approximates fulfillment of all of the desired qualities of a decongestant.

An attempt was made to correlate the number of days that this group remained on duty not involving flying to the number of days that a random group of similar size had been off flying status in the preceding year for uncomplicated upper respiratory infection. It was found that the average number of days for each group was 4.8, which is significant only in that it indicated that the course of an upper respiratory infection is not altered by therapy with a decongestant alone.

It was the opinion of this observer that the nasal decongestant under investigation functioned very satisfactorily in the preliminary observations with upper respiratory infections. Other investigators[1,2] have reported very good results with use in allergic rhinitis and other causes of nasal congestion.

Summary

A new nasal decongestant, tetrahydrozoline hydrochloride, was used in 0.1 percent solution in the treatment of nasal congestion accompanying upper respiratory infections in sixty officers and enlisted men. In this study, 80 percent reported excellent results, 16.6 percent reported fair results, and 3.4 percent reported poor results in the relief of nasal congestion. The duration of response in the individuals averaged 3.9 hours, with maximum duration of relief up to 8 hours for a single dose. Resistance acquired during therapy occurred in only three individuals as evidenced by decreasing response to the decongestant and decreasing duration of therapy. All of the individuals tested were observed by direct nasal speculum examination to have excellent immediate response to spraying with the decongestant.

Side effects were minimal and there were none of the complications which are often seen with use of the other sympathomimetic pressor drugs used as topical decongestants. There were no cases of rebound congestion of the nasal mucosa.

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Memorable Events, Lives, and Books, Calendar of Commemoration for 1956

By
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"Time, growing ever older, teaches all things." (Aeschylus: Prometheus Bound, 5th Cent. B.C.)

HEROES and great events are remembered by the posterity year after year. Yet, as Time is growing older, the celebrated events of today are fading away, until they are forgotten tomorrow. It is an act of piety to recall the greater and lesser men of previous centuries. It is also a wise precaution that we pause for a blink, in the rapid progress of our times, to contemplate the past and its teachings for a brighter future.

Our calendar of centennial and semi-centennial celebration of defunct heroes and events may be brief and fragmentary. Yet, even in a short backward glimpse, we can realize that human life has always been a continuous struggle. Even the fragments of history, here collected for commemoration, will show that Man's destiny is Fight, and his success comes from self-confidence and Trust in God.

Let us take a moment, therefore, while the year 1956 still delights us with its freshness. Let's chain together some of the broken pieces of history, lives of people and achievements, which the new year brings us as glittering jewels of memory.

PART I: MEMORABLE EVENTS

The oldest memorable event for this new year dates from the legendary period of Egyptian and Greek history. In 1856 B.C., a group of Egyptian colonists settled in Argolis, a peninsula of Morea, under the leadership of Inachus. They built a city, the oldest in Greece. After the chief's grandson it was called *Argos*. The city stood for many centuries, but, about 1300 years after its foundation, it was destroyed by war. Another Greek town, *Athens* was founded in 1556 B.C., according to legends, by Cecrops, another Egyptian, who made it the capital of ancient Attica. He must have used a different, sturdier material:—after more than 3,500 years, Athens is still standing. It is said that the navigator Byzas, "son of Neptune," founded *Byzantium* in the 656th year before the Christian Era. Its first settlers arrived from Argos and Megara.

Speaking of ancient towns, we remember the fate of the once magnificent *Nineveh*. King Ashur founded this city long before Argos was erected. Under his successors the town developed into a center of science and culture, yet contention for power between Babylon and Assyria destroyed it (606 B.C.). When the victorious troops of Nabopolassar, governor of Babylon, and Cyaxares, King of Media, entered the Assyrian capital, it was mostly in ruins. Together with the royal palace, down went also the huge stone-tablet library which had been prepared and collected by rich Assyrian rulers of previous centuries. This wonderful library contained grammars, lexicons, lawbooks, tablets on astrology and mathematics, books on magic and omens, rituals and prayer books as well as music notes. The tablets were cataloged, and librarians were put in charge whose main duty once had been the instruction of people.

About 556 B.C., the Greeks of Asia Minor were subjugated by *Croesus*, the last king of Lydia. From his conquest, this man accumulated a proverbial treasure and fortune. He was the one whom Solon, the legislator of Athens, had once cautioned that "no man should be called happy before his death." When Croesus was defeated by the Persian Cyrus, he had to agree with the wisdom of Solon.

The year 456 B.C. was significant for the Greek and the Jewish people. *Cimon*, Athe-

nian general and son of Miltiades, was recalled from exile into which the jealousy of Pericles had sent him. After his return to Athens, he spent much time in adorning the city with walks, fountains and olive-groves. The long wall, which Hipparchus had begun to erect around that city, was also finished. It happened in the same year that *Esther* (or Hadassah), the daughter of Abihail, saved her Jewish countrymen in Persia from the universal massacre planned by Haman. This deliverance is celebrated by the Jews at their feast of Purim (:Lots).

Fifty years later (406 B.C.) the peoples of classical antiquity were engaged in several wars. The Romans had started a *ten-year war against Veii,* ancient city of Etruria and formidable rival neighbour of Rome. The Romans had been determined to rid themselves of their rival by a siege, but the city held out for ten years. The Romans then built a mine that led into the citadel and resulted in the capture of Veii. This is the first recorded war when pay was given to soldiers. In Greece, a *war between Athens and Sparta* had been going on with varying success. Kallikratides, Spartan general, was killed by the Athenians in the naval combat (406 B.C.) at the Arginuses, a group of islands in the Aegean Sea. When the victorious Athenian generals returned to their town, instead of being received in triumphal parade, they were condemned to death for having neglected to bury their dead. Half a century later (356 B.C.) again a ten-year war started, the *Sacred War* of Greece in which Philip, King of Macedonia, conquered Thrace and Illyria, thus preparing an empire for Alexandria, his newborn son.

The same night that Philip's son was born, a crazy and obscure Ephesian citizen by the name of Herostratos decided to make himself immortal by setting *fire to the temple of Diana in Ephesos,* one of the seven marvels of the world. His name remains forever the sign of anyone who would commit an act of violence for the sake of publicity.

The record of the following three hundred heathen years lists many famous leaders, great politicians and important battles in the small kingdoms and republics of the ancient world. In *Athens, democracy* was established (306 B.C.). The *Carthaginians* were *defeated* at Ilipa, and driven out of Spain by the Romans (206 B.C.). The Iberian Peninsula became a Roman province, with two political divisions: Hispania Citerior and Hispania Ulterior (Hither and Further Spain). Another century brought *defeat to Jugurtha,* king of Numidia, who would not be known today except for the works of Sallustius Crispus, Latin historian. The Jugurthine War (42-106 B.C.) caused a lot of trouble to the Romans, until the treachery of an ally delivered Jugurtha into the hands of General Marius. Then, Numidia was swallowed up by the Roman Empire, and Jugurtha perished in the dungeons.

Another significant date in the expansion of the Roman Empire is the year 6 Anno Domini when, under an order of Emperor Augustus, *Varus progressed into lower Germany* beyond the Rhine. He began to administer the land as a Roman province, to the great indignation of the German chieftains. (As later events showed, the Germans had not tolerated their subjugation for long.) In the year 56 A.D., *Apostle Paul went up to Jerusalem* with a presentiment that heavy evils were about to fall on him through the ever-maddening malice of the Jews. The very sight of Paul would cause the people of Jerusalem to get into the wildest fury. Forty pharisees had sworn neither to eat nor drink until they had taken Paul's life. The Roman military governor thought it best to put Paul "in protective custody" in Caesarea (where he was unjustly kept for two years).

In the early years of the third century, some freedom loving German tribes, who inhabited the area at the Lower Rhine and the Weser, formed a confederacy, and called themselves Franks, or Freemen. They were a rapacious group of people who began to strike at their neighbors. The *Franks invaded Spain* (256 A.D.) and left that Roman province in ruins for at least two centuries. Their ravages were partly stopped by *Constantine the Great* after he became emperor at the death of his father (306

A.D.). This event also marked the *end of the persecution of Christians.* Constantine suspended, or repealed, the former imperial edicts concerning persecution, and granted free exercise of their religious ceremonies to those who professed to be members of the church. Later, he gave other signs of his religious tolerance, adopted the cross (*labarum*) as his standard, and established Christianity as the official religion of the Empire. He transferred his court to Byzance ("Constantinople").

In the seventh century (656 A.D.) *Ali* ibn Abu Taleb became *the fourth caliph* of the Saracens. He was a poet, and the husband of Fatima, daughter of Mohammed. His dissenting religious views have been followed by the large sect of Shiites. His posterity, which includes also the Fatimite dynasty, is still kept in special honor among Mohammedans. A hundred years later (756 A.D.), the *Omayyad dynasty* in the West was firmly established in Córdoba, the city to become the Athens of Western Europe, the seat of arts and sciences for a couple of centuries where 600 moschs, 900 baths, and 200,000 houses testified the peak of Moorish culture.

The subsequent centuries were filled with wars of the empire builders. *Manuel Comnenos,* Emperor of the Byzantine Empire, formed the design of conquering Italy and the West (1156 A.D.). This fearless ruler's reign of 37 years was a perpetual warfare against everybody, though he did not unite the skill and prudence of a general with the personal valor of a soldier. In Asia, in his Far Eastern conquest, *Genghis Khan* reached the Amur River, and convoked a general assembly of his chieftains (1206 A.D.) who proclaimed him "the Greatest of Khans" (the meaning of Genghis Khan) and promised their support. Thus, he became the emperor of the Mongols. In India, Muhammad Ghori died (1206 A.D.), and his empire was soon dismembered. Kutab-ad-Din, his favorite slave and general, seized the *throne of Delhi,* and founded a new dynasty to last for about 80 years.

In the course of the Hundred Years War, a great victory came to the English and a terrible disaster to the French, when the 26-year-old Edward, the Black Prince, son of King Edward III, won the *battle of Poitiers* (1356 A.D.), and captured King Jean (The Good) together with all the royal princes and a great many French noblemen. It was a catastrophe as great as Waterloo and the two Sedans in the 19th century. The disaster was the scourge of God, perhaps, for *the bloody feast of Rouen* (1356). Charles the Dauphin gave a banquet to his private friends at Rouen to which his brother-in-law, Charles the Bad, was also invited. When King Jean heard of the feast, he became mad, intruded, and beheaded four guests on the spot.

In Germany, at the 1356 Diet of Nürnberg, Emperor Charles IV promulgated an imperial edict, named *the Golden Bull* (called so after its golden seal-case), establishing the mode of imperial election and regulating other affairs of the empire, including the right to private redress (the so-called *Faustrecht*). At the Far East, an anti-Mongol rebellion occurred (1356) among the *people of Korea.* Since the Korean kings remained loyal to the Yuan Dynasty, their rulers, the divergence of political opinion between people and administrators resulted in a long series of civil wars.

In 1456 A.D., the Turks, under Mohammed II, finished the *conquest of Athens* and a part of Greece. The city of Athens fell into the hands of Omar. To increase its degradation, the town was regarded as an appanage of the harem, and governed by a black eunuch. Turkish expansion toward the North was successfully stopped by the *Hungarians at Nándorfejérvár* (the present Belgrad) where János *Hunyadi,* governor of Hungary and greatest captain of his age (1406-56), fought under the sign of the Holy Cross in defense of Christendom. Though he had a complete victory, in a few weeks he fell victim to dysentery, the eternal scourge of troops. His friend, John *Capistrano,* the 70-year old Italian Franciscan (1385-1456), who carried the cross among the Christian warriors of the fortress to raise their enthusiasm to a great height, soon followed

Hunyadi to the grave. (The Franciscan was later canonized as the "Apostle of Europe.")

The year 1606 is a red-letter year in the *history of Virginia.* At the request of the London Company, James I had given a charter which permitted the first permanent settlement of the English in America in an area from Lat. 34° to 38° North, extending 100 miles inward from the sea. The adventurous undertaking was under the leadership of *Captain John Smith,* a gentleman of fortune who in his earlier years had fought in Hungarian service against the Turks. He had fallen into captivity, but escaped from the Crimea, and offered his talents to the English company. The expedition to the New World and to the area of the future Jamestown started in 1606. As Capt. Smith recorded in his General History of Virginia (publ. 1624): "On the 19 of December, 1606, we set sayle from Blackwell, but by unprosperous winds, were kept six weeks in the sight of England. . . ."

In the history of Europe, the *Seven Years War* (1756-63) was the third and last and most terrible of the contests between Frederick the Great, of Prussia, and Maria Theresia, of Austria and Hungary. It was fought for the possession of Silesia. Though by the *Treaty of Versailles* (1756) Russia formed a union with France to support Austria against Frederick, at the end of the war Prussia was to gain a high rank, while Europe was to lose a million lives in bloody battles. Great Britain had its own troubles in India. The metropolis of *British India* was then the city of Calcutta. Surajah Dowlah, the nabob of Bengal, launched an attack against the town (1756) which was partly defenseless. After two days' siege, the nabob captured the town, and took 146 British prisoners, who were cruelly cast at night in a 20-ft. square dark cell ("the *Black Hole of Calcutta*") where only 23 remained alive by the next morning.

In America, while the French-Indian War was in progress, *Oswego* was taken by the French (1756). Great Britain continued its *insults against American colonists.* A royal order in May reduced all higher American colonial officers to the rank of captain when they were serving in the same Army with officers of the King's commission. The American soldiers had to hear themselves called greenhorns and ragamuffins by the commanders sent over from England. The odious order was soon changed (1756) by the government of William Pitt.

The political history of the world in 1806 was chiefly influenced by Bonaparte *Napoleon,* and his various maneuvers against "The Shark." The French people had been idolizing their emperor, and, in a facsimile of Trajan's Column, they started to erect a bronze *column at the Place Vendôme* in Napoleon's honor. The outside spiral of the column was to represent, in bas-relief, his various battles. By his own decree, Napoleon also began to build the *arc-de-triomphe on Champs Élysée* at the circular plaza where twelve avenues meet in Paris. He established a few *new kingdoms* such as Holland, Naples, etc., and installed his own relatives there to be kings. On the other hand, he also took good care to *disrupt the old German Empire* which had been in existence since Otto the Great (962 A.D.). With the abdication of Francis II, Emperor of Austria, the Holy Roman Empire and its two main institutions of government, the Imperial Chamber and the Aulic Council, ceased to exist. In place of that old political framework Napoleon implanted the *Confederation of the Rhine* which formally allied sixteen German princes with France.

Meanwhile, Great Britain ("The Shark") brought together a *fourth coalition* of powers against France. Jefferson's American Congress passed a *Non-intercourse Act* in April, excluding a number of important articles of British manufacture from our ports. But this threat had no effect on English policy. In the same moment, Charles James Fox, the British prime minister, announced a *blockade of the coast,* rivers, and ports of Northern Europe, from the mouth of the Elbe in Germany to the harbor of Brest in Brittany. Napoleon's revenge came in November after he had crushed the German Army at Jena and entered Berlin. In his famous *Berlin*

Decree, Bonaparte introduced a continental antiblockade against England, by forbidding the nations of Europe to trade with Great Britain. It is believed that the decree and the subsequent British resentment started the downfall of Napoleon. The emperor's policy, instead of destroying British commerce, wellnigh ruined the commerce of his own and other countries, and it was only to increase the prosperity of England. Napoleon's actions in Spain were also the trigger to start the *War of Independence in the Latin American* countries.

The famous *Crimean War ended* in 1856. On February 26, the armistice was concluded, and on March 30 a treaty of peace, marking the close of hostilities, was signed at Paris. The British and French troops had to evacuate from the Crimea, while Russia had to lose its dominion of the Black Sea and the protectorate of the Eastern Christians. The sum total of casualties was staggering. France lost about 63,500 persons, and the British lost 24,000 of which 16,500 died of disease and privation. The Russian loss came to 500,000 men. Along the Mediterranean coast, people still enjoyed themselves, and in Monaco the *first gaming tables* were set up (1856).

In the United States, 1856 was an *election year, and three parties* were contending for the presidency: the Democratic, the new Republican, and the still newer American. After its formation in Kansas, the Republican Party absorbed the entire Free-soil Party, the greater part of the Whig Party, and some of the democrats. But that portion of the Whig Party which was for slavery, especially in the South, merged into a new organization called the American Party. This group also objected to foreign influence, and to Roman Catholics. For the secrecy of its organization and the reticence of its members, the American Party was popularly known as the *"Know-nothing Party."* Mr. James Buchanan, the democratic candidate, won the election. Mr. Fremont, the candidate of the First Republican Convention, lost it. The then current sentiments of the South toward slavery were best shown by the fact that the governor of South Carolina earnestly recommended the *revival of African slave trade.* The year was also a blow to the *teetotallers* in Maine. In that State the liquor traffic had been suppressed for ten years, and the stringent laws provided even for the confiscation of alcoholic drinks. In 1856, however, the existing liquor laws were repealed, and the distillation, selling, and possession of spirits again became lawful.

Arts and Sciences

The new year strikes a particularly rich vein of cultural and scientific anniversaries. Egyptian legends tell us that Thoth invented *cursive writing* about 2806 B.C. Greek authors state that the famous *Eleusinian mysteries* were instituted in 1356 B.C. by Eumolpos, son of Poseidon. The mysteries at Eleusis were the sacred rituals to celebrate the annual festival of Ceres (or Demeter), goddess of fertility and agriculture. The rites were held on nine successive days of which the eighth was named Epidauria in honor of Aesculapius since that mythical demi-god doctor had once arrived too late at the celebration from his native city of Epidaurus.

According to a Hindu legend, a 900-carat diamond was found in 56 B.C. in a mine at Golconde, Deccan. Since then, the gem's possessors had been mostly the rulers of Hindustan. In the 18th century the uncut diamond was named the "mountain of light," or *Koh-i-Nur.* Once it had been valued at 200,000 pounds. The present size of the precious stone is 186½ carats only, and it belongs to the royal family of England.

In the second century of the Christian Era, Cajus Julius Lacer finished the famous *bridge over the Tajo* at Alcantara (106 A.D.). For Trajan's troops he built it of granite blocks without cement. Another Roman architect began to erect the *baths of Caracalla* near the Porta Copena in Rome (206 A.D.). The public baths had been planned by Emperor Septimius Severus, and were to be finished by his son, Marcus Aurelius Antoninus, playfully nicknamed

Caracalla, after his long hooded tunic in Gaul fashion.

Anno Domini 556, the Byzantine Emperor Justinian introduced the *silkworm* in Greece, and planted a large mulberry forest in the Peloponnesus. He is the same ruler who is still celebrated for his code of laws, pandects, and by the victories of his great generals, Belisarius and Narses. He had been the husband of the witty and beautiful Theodora, once prostitute and dubious actress in the brothels of Byzance. Till the reign of Justinian, the silkworm (Bombyx mori) had been confined to China. Two Christian Persian missionaries smuggled out from China some silkworm eggs in a hollow cane, and brought their gift to Justinian. The eggs were hatched, and the worms were fed with mulberry leaves. One may wonder how the world had changed if the art of printing, which the Chinese had known at Justinian's times, could have been imported to Greece in a hollow cane as the silkworms were.

The twelfth century was important in the growth of monasticism. A number of hermits, who had been living in the caves of Mount Carmel in Syria, congregated into a monastic order at the instigation of Berthold, Count of Limoges (1156 A.D.). The *order of Our Lady of Mount Carmel* (the Carmelites) became one of the four great mendicant orders of the Catholic Church. (It was driven out of Palestine by the Saracens in the 13th century.)

It is known that the Hindus had been using magnet stone for the extraction of broken arrow-tips from wounds. The Arab Halifa, of Aleppo, suggested (1256 A.D.) that magnet could be successfully used for *removal of the broken tips* of blood-letting knives. By the 14th century, technology had produced a few ingenious contraptions. It is reported that the *balloon* was known in Peiping as early as 1306 A.D. In that year, a weapon-smith, called Rudolf, invented a *machine for wire-making* in Nürnberg, useful in the manufacture of armor for knights. Also in 14th century Nürnberg (1356), German artisans began to build the famous *clock in the Marienkapelle,* the *"Männlein-laufen"* which was to commemorate the Golden Bull granted by Charles IV in the same year (see above). The manikins of the clock represented the emperor and the seven electors. Thereafter, the mechanism of the clock had been running for 150 years before any overhauling was needed (in 1506).

The period of the renaissance excelled in foundation of learned institutions, building of magnificent churches, inventions and discoveries of various kinds. In 1506 A.D. began the erection of the beautiful Gothic Notre Dame *Church in the village of Brou,* near Bourg (Ain), as an act of the religious devotion of Marguerite of Austria. In the same year, the foundation *stone was laid for St. Peter's Church* at Rome, the largest cathedral in Christendom. It was built on the site of a much older basilica which Constantine the Great had founded (306 A.D.) over the reputed grave of St. Peter, and near the spot where he was killed by the Romans. The old basilica had fallen in decay, and already in 1450 the design of another church was drawn by Rosselini, architect of Pope Nicholas V. Nothing further happened, however, until the reign of Pope Julius II whose architect, Bramante, prepared a new design in the form of a Latin cross. Thereafter, the church was to grow in and by the hands of first-class artists. (Its actual building was finished 100 years later during Pope Paul V, and it was dedicated by Urban VIII in 1626.)

The year of the beginning of St. Peter's was also the birthyear of the idea of the *Copernican System.* Nicolas Copernicus, the astronomer physician, began in 1506 to apply his fund of observations and mathematical knowledge to correcting the Ptolemean system of astronomy which then prevailed. He completed his studies in 1530, but refused to publish them until 1543 *(De revolutionibus orbium).* He stated that the universe is spherical; that the earth and the sea make one globe; that the motions of all heavenly bodies must be uniform and circular; that the earth has a motion round its axis; that the ancients were wrong in placing the earth in the center of the universe.

In 1606, Jansz, the Dutch explorer visited

Australia aboard the "Duyfen," and described the north coast of the newly seen continent. (N.B. It is most likely that the Chinese had known Australia for a long time.) Just about the same time the expedition which the Spaniards sent a year before from Peru, happily arrived in Australia. One of the Spanish commanders, Vaz de Torres, gave his name to the dangerous passage now called the *Torres Straits.* In Italy, Antonio Carletti introduced the *art of chocolate making* which he learned in the West Indies. In London, the apothecaries segregated themselves from the grocers, and formed their own corporation under the name of *"Apothecaries Company."* A semicentury later (1656), the *pendulum clock* was invented (Huyghens), and the first sample of *guttapercha* (then called mazer-wood) was introduced to London (Tradescant). Issac Vossius detected the meteorological law that all *rivers start from rain water.* Werner Rolfink proved by autopsy that *cataract* is essentially a turbidity of the crystalline lens.

Two hundred and fifty years ago (1706), the *Montpellier Academy* of Sciences, and the *Court Hospital* in Moskva were founded. In England, the first *Life Insurance* Company started its function, and the *treatment of the insane* was reformed according to the suggestions of Daniel Defoe (the author of Robinson Crusoe, and Roxana). In Marseilles, the *first marine biological station* of the world was established (Marsili). An English physicist discovered that *electricity* can be *produced by rubbing* glass with wool or leather (Hawksbee). Vieussens described the ring-like *loop of nerves,* connecting the middle and inferior cervical ganglia, which winds around the subclavian artery.

Bicentennial celebrations are due to the *Pennsylvania Hospital,* which opened its doors to patients in 1756, and to the *Meath Hospital* in Dublin. The first Catholic Association for *relief from disabilities* was formed in England. In Stockholm, the *Royal Statistical Bureau* was established. In that year, Caldani, Italian scholar and precursor of Galvani, first observed that the *frog's leg jerks* when kept near an electrizing machine. Quinquet, apothecary in Paris, began to use Da Vinci's original idea of putting *glass cylinders on lamps.* In the same year, a London architect (Ravehead) first applied the *pavillon system* in building the Marine Hospital at Stonehouse, Plymouth. A Prussian military surgeon (Schmuckert) thought that he invented a wonderful powder *("Pulver wider den Hunger")* which could serve as concentrated food for a fortnight to keep on marching the hungry troops of Frederick the Great. Nicolas André, surgeon in Versailles and father of orthopedics, first used the term *neuralgia* in the description of a disease of the infraorbital nerve. Thomas Macaulay skillfully applied various means for the *artificial induction of labor.* On October 29, 1756, the *first lithotomy* in America was performed by Thomas Bond, Philadelphia physician and surgeon.

The early years of the 19th century produced many things new in science and technology. Fulton, who had thought of steam as a motive power of vessels, visited Scotland where he secured the drawings of the machinery of the *Charlotte Dundas,* an unsuccessful steam-boat. After his return to the U. S. in 1806, he began at New York to build his own boat, the *Clermont.* In the same year, the *Agricultural Society* was organized in Washington, D.C. The year was also important in the *organization of the medical profession.* The New York State Legislature passed a law authorizing the legally qualified physicians and surgeons of each county to form into county societies which were also given the right to appoint boards of censors to examine and license all applicants for admission into the profession in the counties. Only those who had studied three years with a practitioner and were at least 21 years old were to be admitted to the examinations.

It was also in 1806 that the American government sent out an *expedition under* General Zebulon M. *Pike* to explore the area later known as Colorado. The general discovered Pike's Peak (14,108 ft.); he also made a treaty with the Sioux Indians by which they ceded to the Whites land including the Falls of St. Antony on the Mississippi, and the site of Minneapolis. In the same year, John Colter, American trapper

and a member of the Lewis-Clark expedition, discovered and explored the wonderland in Wyoming where he saw burning pitch, hot springs, fountains, etc. But, at first, nobody believed his story concerning the *Marvels of Yellowstone Park.*

Public sanitation also made some progress in the early 19th century. In West London and Middlesex, *water-supply companies* were established (1806), while in Paris an ingenious apparatus was patented for *filtration of the water* of the Seine River. During 1806, Oken observed the formation of bowel from the yolk sac, and discovered the *primordial kidney.* Tenon's studies led to the discovery of *Tenon's capsule* of the eye. Vaquelin, French chemist, examined the chemistry of the *cinchona bark,* and learned about malic acid and other organic acids. Baron D'Alibert, French dermatologist, described *mycosis fungoides* in his textbook on skin diseases. Surgeons were able to *ligate the external iliac* (Abernethy) and the subclavian arteries (Cooper).

One hundred years ago (1856), the tempo of cultural and scientific progress was of the same high speed as today. The U.S. was enriched by many *colleges and institutions* of learning, such as the Albright, Birmingham, Lake Erie, Newberry and Oregon colleges, and the Niagra, St. Lawrence, Seton Hall and Suffolk universities, and the Dudley Observatory. That year the *Atlantic Telegraph Company* was organized. The submarine telegraph was laid from Cape Breton to Newfoundland, and the New York-Newfoundland section of the cable opened on November 10, 1856. The practical knowledge of engineers was greatly perfected. Better methods in metallurgy made possible the *casting of Big Ben,* the large bell of Westminster. An American invented a *printing machine for the blind.* The first practical *typesetting* machine was developed by the Swedish Sörensen. Paris finally completed its *system of sewers* under the direction of Belgrand, and Africa laid down its first *railway in Egypt.* Gamond suggested the construction of a *tunnel under the La Manche,* with insertion of 13 artificial islands. Many practical *inventions* were introduced (1856) such as the sleeping car (Woodruff), the silver glass-mirror (Liebig), the cylinder inductor (Siemens), the ferrotypy (Smith) which was a kind of quick negative photography, the baking powder (Horsford), the sensitive paper that allowed color photography (Zenker), the aerated bread (Dauglish), the microtome (Welcker), etc.

The chemists also supplied the *laboratories and pharmacies* with many new discoveries (1856) :—methane, ethylene, propylene (all three by Berthelot), allyl alcohol (Cahours), cinnamic aldehyde (Chiozza), hydrofluoric acid (Frémy), ozone from rain water (Brames), a reagent for the detection of ammonia compounds (Nessler), etc. Perkin in England developed mauvein, the first useful *aniline dye* as coal tar product. Panum in Denmark proved for the first time that *decaying protein* may become poisonous. Rudolf Buchheim built from botany a new science called *pharmacognosy.*

Great advances were also made in the field of the biological and medical sciences. Anno Domini 1856 Fuhlrott obtained the skull of the *Neanderthal man,* later to become the greatest stimulus for paleontological research. Brücke collected interesting observations on the physiology of *speech sounds,* and then made the development of phonetic transcription possible. Claude Bernard described the glandular *cells of the pancreas,* and Schultze demonstrated the relation of *olfactory nerves* to the neuroepithelium of nasal mucosa. Billroth saw *giant cells* the first time, and described the *endothelial tumors.* Many pathological conditions were reported by European doctors, while there seemed to be some stagnation in the medical sciences of America. At the 1856 annual meeting of the American Medical Association, held at the hall of the Detroit Fire Department, Samuel Gross had to deplore the status of *American medical literature,* and to point out some of the causes of its backwardness.

Part II. Memorable Lives

Among the famous men whom the 1956 new year of the Lord calls back to memory a few ancient ones will remain outstanding

at all ages. Many future generations will keep alive such names as *Aeschylus* (d.456 B.C.), the father of Greek tragedy and founder of dramatic art; *Euripides* (d.406 B.C.), another Greek tragedian; *Aristippos* (d.356 B.C.), Greek hedonist and anarchist, and founder of the Cyrenaic school of philosophy; *Eudoxos* (d.356 B.C.), whom Cicero called the prince of astronomers; *Alexander the Great* (b.356 B.C.), conqueror of the ancient world and the cutter of the Gordian Knot; *Euclides* (b.306 B.C.), Greek engineer and the father of mathematics whose works are still the basis of plane geometry in our high schools; *Marius* (b.156 B.C.) and *Pompeius* (b.106 B.C.), Roman generals and politicians; *Marcus Tullius Cicero* (b.106 B.C.), Roman orator, illustrious statesman, man of letters and one of the greatest masters of rhetoric who ever lived; *Asklepiades* (d.56 B.C.), Greek practitioner in Rome whose slogan for treatment had been, "Swiftly, Safely, and Pleasantly" *(Cito, tuto, jucunde)*.

The two Greek tragedians reached more than three-score-and-ten years before they came to their tragic end. *Aeschylus,* who wrote the "Persians," and the "Prometheus Bound," in his old age retired from Athens to the Sicilian court of King Hiero. The oracle predicted to him that the "fall of a house" shall prove fatal to him. Hence, he avoided houses, and went to reside in the fields near Gela, Sicily. Then, he was killed by a tortoise which an eagle dropped upon his head. *Euripides,* the author of such plays as "Iphigenia" (in Aulis, and in Tauris), invented the "Deus ex machina" stage-solution of dramatic difficulties. He is said to have been killed by dogs set upon him by two brother poets who were envying his reputation.

Aristippos was one of the unruly pupils of Socrates. This man aspired to a world where there would be neither masters nor slaves, and all would be free from worry. Of this philosophical sensualist, Plato said that he was "the only man who could wear with equal grace both fine clothes and rags." *Eudoxos,* the astronomer, invented the horizontal solar quadrant. He was a pupil of Plato and of the priests of Egypt where he had resided for many years. His last years are said to have been spent on the summit of a high hill that he might have the starry heavans ever before his eyes.

Alexander the Great, son of Philip of Macedon and Olympias, was the pupil of such famous Greek persons as Leonidas, Lysimachus, and Aristoteles. He won the first victory when he was 16 years of age. His father embraced him, and said: "My son, seek for thyself another kingdom, for that which I leave is too small for thee." In his conquest of the world, Alexander spread the language and civilization of Greece wherever he went, and planted Greek kingdoms and cultural centers (such as Alexandria in Egypt) which, then, continued to exist for centuries. After a banquet near Babylon, he was suddenly taken ill, and died eleven days afterwards. His dream of a United Nations of the ancient world was never realized.

Cicero's end was equally tragic. When he was consul, he made his tenure memorable by the detection of the conspiracy of Catilina. Thereafter, Cato and Catulus began to call him the "father of his country." Nevertheless, his defense of Caesar's murderers and the "Philippic" orations, directed against Marcus Antonius, led to his conscription. Soon afterwards, he was slain by the emissaries of Antonius.—*Asklepiades,* of Bythinia, flourished during Cicero's time. Of him Pliny contemptuously said that he had only five remedies:—abstinence from meat, abstinence from wine, friction (massage), walking, and exercise (which was supposed to produce sweating, and thus carry out the corpuscles of disease).

For commemoration in the new year, our crop of celebrities in the first nine centuries of the Christian Era includes saints, bishops, and theologians only. The memory of *St. Gregory* (b.256 A.D.), bishop and apostle of the Armenians, is held in great reverence in the Greek, Coptic, Abyssinian, and Armenian churches. In 3[illegible] A.D. the 105-year old *St. Anthony the* [illegible] Antony of Thebes), founder of monastic life, died. He had been a wealthy Egyptian; yet he sold

his possessions, distributed the money to the poor, and retired into the wilderness where he remained in seclusion for 20 years while he was, according to Athanasius, exposed to the greatest temptations from the wiles of Satan. (N.B. The temptations of St. Anthony have always been a favorite topic of the artists, painters and writers.) *Sulpitius Severus* (d.406 A.D.) wrote a work which remains standard authority in church history. *St. Landry* (d.656 A.D.), bishop of Paris, made his name perpetual in the medical history as the founder of Hôtel Dieu (God's House) at his see. *St. Hubert* (b.656), bishop of Maestrich and Liége, and patron saint of hunters, became the apostle of the Ardennes. The eloquent *Johannes Damascenus* (d.756) was not only an able philosopher but he also wrote a textbook of dogmatic theology which became standard in the Greek Church. He was of extensive erudition, and obtained the extraordinary honor of being canonized by both the Latin and the Greek churches. The last among the memorable bishops for this year is *Hrabanus Maurus* (d.856), archbishop of Mainz. He has been a favorite of medical people because his work (*De sermonum proprietate,* first publ. in 1467), a sort of encyclopedia, also includes a chapter on medicine and diseases; thus, it is the earliest printed work dealing with medicine.

A few kings, scholars, and poets can be recalled from the latter part of the Middle Ages. *Henry III,* of Germany (d.1056), one of the most energetic rulers, had been in continuous fight with the papal chair. This fight was inherited by his son, *Henry IV* (d.1106) who, at the meeting of Worms, tried to depose Pope Gregory VII. He was therefore excommunicated. For expiation, he had to go in midwinter to Italy. Barefooted and clothed in the haircloth shirt of a penitent, the emperor stood for three days outside the papal castle of Canossa before the pope was willing to remove the ban.

Abul-Qasim, Arab surgeon and physician (d.1106), flourished in Córdoba. He wrote many books on medical subjects. His famous surgical work included many illustrations of medieval instruments. (N.B. A beautiful manuscript of the Latin translation of this surgery was once the property of Mathias, King of Hungary and son of János Hunyadi. I found it in a Budapest library and described it in 1925.) This Arab surgeon favored cautery for many diseases. He was the first to use a syringe with a piston. Another noted medieval surgeon was *John of Arderne* (b.1306), the earliest English surgeon, and physician to John of Gaunt. He was a truly military product, obtaining his education on the battlefields of France during the Hundred Years War. In his work, he discussed the "iliac passion" (today called appendicitis), operation of anal fistula, gout, enemata, diseases of the urinary tract which he treated by irrigations. He cleansed the wounds, instead of smearing them with salves and corrosives. When this surgeon was born (1306), *Jacopone da Todi,* leading poet of the Italian flagellants died. This poet was probably the author of the devotional hymn "Stabat mater dolorosa." In 1406 *Jean de Béthencourt,* chamberlain of Charles VI, a navigator, conqueror, and colonizer of the Canary Islands, died.

The greatest loss to the world in 1506 was the death of the Italian Christopher *Columbus.* Throughout his life, Columbus had to fight against calumnies, petty charges, jealousies, committees, greedy kings, stupid town-councils which looked upon his plan for reaching "India" as the silly product of visionary dreams. When he finally sailed from Palos on Friday, Aug. 3, 1492, to circumnavigate the globe, he had no idea of discovering the New World, nor that, on his third visit to the new possessions of Spain, would he be sent home in chains. Toward the end of his life, he was so disheartened by his many enemies that he never rallied from the attacks. Broken in body and soul, he died in Valladolid in poverty on 20 May, 1506.

Among the memorable persons born in the same year we find the melanchony *Jean Fernel,* the greatest French physician of the renaissance; *St. Francis Xavier,* Jesuit apostle of East India who was buried in Goa; and *John Kaye* (or Caius), the doctor of the Merry Wives of Windsor, and author of a

history on "sweating sickness." Fernel cured the sterility of Catherine de Medici. He also wrote a valuable treatise on syphilis, the disease newly detected in the renaissance, for which he proposed the same "lues Venera." Later demand for his work had been so great that it has been reprinted about 87 times.

The founder of the Jesuit order, *St. Ignatius of Loyola,* died in 1556. The same year ended the life of the infamous *Pietro Aretino.* In his early life, *Loyola* had been a soldier, but when he once became wounded, he devoted the rest of his life to the service of the Virgin, made a pilgrimage to Jerusalem, and founded the Society of Jesus in Paris (1534). Pietro *Aretino* was the son of a courtesan. He had grown up in the atmosphere of 16th century immorality which he excellently and authentically could reproduce in his many writings. In spite of the obscenity of his venomous satires (for which he was called the "scourge of princes"), some of his works, especially the *Sonetti lussuriosi* and the *Ragionamenti,* have been often reprinted. In the year Loyola and Aretino died there was born *John Woodall,* surgeon to St. Bartholemew's Hospital, who is commemorated as the author of "The Surgions Mate" (publ. 1617), one of the earliest works on ship medicine, in which he suggested lime and lemon juice for the prevention of scurvy.

Among the notable renaissance doctors who died at the start of the seventeenth century (1606) we may record *Georg Bartisch,* oculist, surgeon and herniotome, who has been considered the founder of modern ophthalmology. In his book, the "Ophthalmodouleia" (publ. 1583), he included many interesting woodcut illustrations of eye operations. One of them shows, for instance, a helmet, with a box-like appearance over the face and a vertical slit to force a cockeyed child's eyes to look out in the direction of the nose. Bartisch was the first to extirpate the eyeball with success. Another memorable renaissance doctor was *Geronimo Mercuriali* (d.1606), professor at Pisa and Padua, who had written on many medical topics (nutrition of infants, gynecology, etc.), and has been considered the father of dermatology and medical gymnastics. The year 1606 gave to the world Pierre *Corneille,* the creator of drama in French, and Harmensz van Rijn *Rembrandt,* the great Flemish realist painter, whose education was, nevertheless, so neglected that he scarcely knew how to read. His "Tobias," "The Samaritan," and "Anatomical Lecture" are of medical interest. He liked dark grounds. When someone once reproved him for not using more color in his work, he replied that he was a painter, not a dyer.

In 1656 Octave *Piccolomini,* Austrian general, the most celebrated warrior of his time, died; the world also lost two of its then oldest citizens: James Bowels, aged 152, and Dumiter Radaloy, aged 140 years. Tercentennial birthday celebrations are due to *Edmund Halley,* astronomer and mathematician, and to Joseph de *Tournefort,* botanist and French traveler. *Halley* was the first to predict the return of a comet. He also had been interested in vital statistics, and he compiled the mortality tables of Breslau "to show the proportion of man able to bear arms in any multitude." By classifying the plant kingdom, *Tournefort* became a precursor of Linnaeus.

Fifty years later (1706) Guyot, Rosenstein and Sauvages were born. Edme-Gilles *Guyot,* postmaster at Versailles, was the first to catherize the Eustachian tube by way of the mouth. Nils *Rosén von Rosenstein,* in Sweden, was the founder of modern pediatrics. Francois Boissier de *Sauvages,* in the style of Linnaeus, tried to classify the diseases, establishing 10 classes, 295 genera, and 2400 species (some of his terms: peritonitis, gastritis, enteritis, hepatitis).

The most eminent American for the new year is *Benjamin Franklin* (Jan. 17, 1706—Apr. 17, 1790), the fifteenth son of a Boston soap-boiler, who, when he could not stand the quarrels with his 16 brothers, had left for Philadelphia penniless. His many-sided genius made him publisher, philosopher, statesman, lawyer, ambassador, author, inventor, and one of the founders of American Independence. His rod now protects the houses

from lightning all over the world. His medical inventions are still in daily use: the bifocal lens, the flexible catheter, etc. Indeed, he deemed nothing which concerned the interest or happiness of mankind unworthy of his attention. Among his numerous writings the most celebrated are his Autobiography, his Essays, and Poor Richard's Almanac.

Two hundred years ago (1756) there died Johann Nathaniel *Lieberkühn,* German anatomist, who had described the tube-like crypts in the intestinal mucosa (called after him the Liberkühn glands). The same year gave birth to Jean-Antoine *Chaptal,* French chemist who invented the manufacture of alum, saltpeter, etc; Claudius Francis *Chaveau-Lagarde,* French attorney, defender of Marie Antoinette and Charlotte Corday; Sir John *MacAdam,* Scot engineer, inventor of a system of road pavement, who used broken stones for road metal, and made the road convex instead of concave (as before his times); Thaddeus *Kosciusko,* engineer and officer of the American Revolution, an aide to General Washington, erected the works at West Point; Jean François *Pilâtre de Rozier,* French physicist and aeronaut, who crashed to death during an attempt at flying in a balloon across the Channel; and Philipp Friedrich Theodor *Meckel,* anatomist in Halle, who discovered the sphenopalatine ganglion, and wrote on the finer structure of the labyrinth.

Bicentennial birthday celebrations are also due to Mozart, Austrian composer, and John Trumbull, American painter, of Connecticut. *Mozart,* baptized as Johann Chrysostom Wolfgang Amadeus, had been a real musical genius. He composed some pieces at the age of five. He travelled all over Europe, but spent most of his young life in Salzburg, where he was born, and in Wien, where he died from tuberculosis. He composed many masses, symphonies, operas and concertos among which the Marriage of Figaro, Don Juan, and the Magic Flute are the best known. His last piece was his Requiem which he wrote on his death-bed in 1791. John *Trumbull* was aide-de-camp to Washington. His principal master-pieces hang in the Rotunda of the Capitol:—The Surrender of Cornwallis, Declaration of Independence, and Surrender of Burgoyne.

At the beginning of the 19th century (1806) the book of deaths records Charles Augustin de *Coulomb,* French philosopher, engineer, inventor and physicist, who constructed the torsion balance and whose name is now used for the designation of an electrical unit; Jean-Honoré *Fragonard,* painter and engraver in France, whose royalty came from Madame Dubarry (as his teacher's, Boucher's, came from Madame Pompadour); Nicolas *Leblanc,* French chemist, and inventor of the artificial soda; Paul Joseph *Barthez,* one of the most learned physicians of France, who founded the Montpellier Medical School and reintroduced the principle of vitalism in medical practice; Benjamin *Bell,* surgeon of the Royal Infirmary of Edinburgh, who was the first to differentiate gonorrhea from syphillis. In the same year, 1806, there died the two great rivals in English politics, William *Pitt,* and Charles J. *Fox.* Fox, whom Burke called "the greatest debater the world ever saw," survived Pitt by a few months. Both are buried in Westminster Abbey so near to each other that Sir Walter Scott wrote the couplet:

> "Shed upon Fox's grave the tear
> "Twill trickle to his rival's bier."

We may know the life histories of the following physicians and surgeons who all were born in 1806:—G. H. *Barlow,* English doctor, describer of bacterial endocarditis; Jean *Boudin,* French military surgeon and statistician of the Army medical service; Alphonse de *Candolle,* plant physiologist in Geneva, who introduced the idea of "Kampf ums Dasein" (Struggle for Existence) in biology; W. B. A. *Duchene,* of Boulogne, French physician, and one of the greatest neurologists of the world; Ernst *Feuchtersleben,* physician and poet in Wien, father of medical psychology and mental hygiene; Fritz *Hofmann,* a country doctor, inventor of the head mirror; J. *Malgaigne,* French traumatic surgeon; L. *Mauthner,* pediatrist in Wien; J. C. *Poggendorf,* German physicist and science historian; August D. *Waller,* the first to demonstrate the action current of the heart;

E. F. W. *Weber,* discoverer of the inhibitory power of the vagus nerve.

One of the richest men in powerful ideas was John Stuart *Mill* (1806-73), the oldest son of James Mill, the economist. He could read Greek by the time he was eight years old. As a youngster he had been a close associate of his father. He wrote a book on "Principles of Political Economy." It appeared in 1848, the same year when the Communist Manifesto was also published by Marx and Engel. Mill had been deeply impressed by the utopistic ideas of the socialist and other critics of capitalism, but, unlike Marx, he felt no need for a struggle with the capitalist order as a whole. He looked with horror upon the New World where "the life of the whole of one sex is devoted to dollar-hunting, and of the other to breeding dollar-hunters."

In 1856 death claimed Jean Z. *Amussat,* French surgeon who performed the first lumbar colostomy for obstruction of the bowels; Amadeo *Avogadro,* Italian chemist and physicist; G. J. *Guthrie,* leading English military surgeon; and Joseph C. A. *Recamier,* of Paris, who popularized the use of vaginal speculum. In 1856, the U.S. lost John Collins *Warren,* a leading physician and surgeon, and son of the founder of Harvard Medical School. He himself was a founder of the Massachusetts General Hospital. Ether anesthesia was first used at his surgical service, on Oct. 17, 1846.

In 1856 a famous German poet, the ironic and melancholic Heinrich Heine (b.1799), and a German composer and song writer, Robert Alexander Schuman (b.1810) died. At the end of his life, *Heine* became paralyzed and blind. *Schuman* wanted to drown himself in the Rhine, and spent the last two years of his life in a mental asylum. In a letter (Apr. 9, 1832) Heine left a vivid account of the cholera outbreak in Paris. On the last day of the carnival, a masked ball was in progress, the gayest harlequin suddenly collapsed, laughter died out, and he was carried to the Hotel-Dieu. Soon, the public halls were also filled with dead bodies sewed in sacks for want of coffins.

Centennial birthday anniversaries are due this year to many notables. Among them are Sir Charles A. *Ballance,* neurosurgeon; Louis *Brocq* and Jean *Darier,* French dermatologists; Sigmund *Freud* and Emil *Kraepelin,* the latter being one of the greatest psychiatrists, who gave the world the concepts of dementia praecox, manic depressive psychosis, etc., and wrote the often reprinted Psychopathia sexualis; Herman *Sahli,* Swiss clinician, whose textbook became standard for laboratory diagnostic methods; George Bernard *Shaw* and Oscar *Wilde;* and Julius *Wagner von Jauregg,* Austrian psychiatrist and winner of the Nobel Prize for his treatment of general paralysis with malaria inoculations.

Our country also has a good share of centennials in 1956. Russell H. *Chittenden,* biochemist; Francis X. *Dercum,* neurologist and psychiatrist; Lawrence F. *Flick,* tuberculosis specialist; Robert E. *Peary,* the Arctic explorer and discoverer of the North Pole; John S. *Sargent,* son of a physician, and distinguished painter of portraits; Thomas Woodrow *Wilson,* who fired the imagination of the masses of the world with visionary world peace; and Casey Albert *Wood,* military surgeon and famous American ophthalmologist all will be honored with a hundred candles by certain American cultural, scientific, or social institutions.

Part III. Memorable Books

Fashionable books of a period are like fashionable women. When first introduced into society, they are much talked about. Sooner or later, however, their charm of novelty wears thin, and they become outmoded by a newer and fresher crop. Some of them, those who possess unexcelled beauty of body or mind, will survive. The rest will sink to oblivion. Only a few books of great inner value can reach the state at which they ripen into classics, for all times to come. Somewhat larger is the number of the works which, for some accidental facts in their public life, have become gems of the bibliophiles. The books on our anniversary parade of 1956 belong to one or the other class of survivals.

Both a classic and a rarity is a codex, the earliest specimen of the written literature of

Russia. Its text, based upon the *Slavonic gospels,* was written in 1056 A.D. at the order of the governor of Novgorod. A famous work, the *Sphere of the World,* was composed by John Hollywood (de Sacrobusto) in 1256, which for more than 300 years was accepted as the standard of mathematical geography. Similar popularity, lasting for 250 years, was the share of a work on *Husbandry* which Pietro dei Crescenzi finished in 1306. A less important, but none the less rare work, is the *Small Testament* which the slightly infamous French ribald poet, François Villon, wrote when his sweetheart brought him into trouble, and he had to escape from Paris in a hurry in 1456.

Among the memorable medical writings of the renaissance period we find the *Small Treatise on Hernia* (Lyon, 1556), written by Pierre Franco, the great Provençal surgeon. Shakespeare published his *King Lear,* and his *Macbeth* in 1606. A less known book of the same year's vintage was the *Observations castrenses* of Tobias Cober, military surgeon, who described also the relation of lousiness to petechia (now rickettsial) fevers.

In 1756 there was printed the epoch-making book of Philipp Pfaff, of Berlin, on the *Teeth and Their Diseases,* which changed the technic of dentistry. But more important in the history of ideas than the dentistry book was Voltaire's *Essay on the Morals and Spirit of Nations* (1756). This philosophical work was based upon the mental attitude of its writer which eliminated providence from history, and tried to prove that progress in the world was possible only if the nations would free themselves of superstition and error.

With his classical manual on heart diseases *(Essai sur les maladies et les lésions organiques du coeur.* Paris*)* in 1806, Corvisart, Napoleon's favorite doctor, laid down the foundation of modern cardiology. Similarly, the classical studies of Helmholtz in 1856 became the ground for *Physiological Optics.*

Fifty Years Ago

Fifty years ago the newspapers of all countries were full of signs of national and international unrest of the "classes." In England, the advocates of woman suffrage caused a lot of trouble at Westminster. They demanded votes, while trade unions demanded the 8-hour work-day. In Jena, the German social democrats demonstrated. In Spain, communists and anarchists bombed the King and his newly wed Queen. In Russia, the Czar opened the first duma, yet the communistic and anarchistic activities in that country continued, calling for retaliation by Kozaks. Then, Maxim Gorky, Russian author, came to America to interest our people in freedom for the Russian people, but his questionable Russian girl companion arrayed public opinion against him, and when he left, he was "unhonored, unwept, and unhung," as a daily paper aptly put it.

Norway and Sweden separated, to become independent kingdoms. Belgium annexed the Congo Free State. In France, the Moroccan convention, the controversy with the Pope, and the final acquittal of Captain Dreyfus drew the most public attention. Persia also opened an independent parliament. China published new regulations for the suppression of traffic in opium. The world at large did not care much about the Cuban insurrection.

In the U.S., the immigrants continued to arrive at a rate of over a million a year. Many of them became victims of exploitation, however. This fact left a deep impression on the writers of the year. Many of them went to the field of exposure, and the low-priced magazines appeared (McClure's, American, Cosmopolitan, Munrey's, Collier's) running exciting stories of lawlessness. Upton Sinclair's *Jungle* hit the packing houses as so many pestholes. Thomas Lawson's *Frenzied Finance* threw light upon the stock market. The *Octopus* of Frank Norris was about the wheat pit. Indeed, "muckraking" was the business of the day, a term which Teddy Roosevelt had created at a Gridiron Club meeting address in the sense of "overindulgence in spectacular exposure of evil" to please the morbid taste of the populace.

As a result of exposure, however, there was important social legislation in 1906 in the U.S., showing the interest of Congress

in public health and morals. Thus, after Sinclair's book was published, Roosevelt appointed a special commission to investigate condition in the stockyards and packing houses of Chicago. Congress promptly passed the *Meat Inspection Act.* This was followed in February by the *Pure Food and Drugs Act.* The last met bitter opposition of the beef trust and of the concocters of various patent medicines. Another law regulated the railroads and increased the power of the Interstate Commission. A third social law was the *Employers' Liability Act,* the first attempt to make corporations responsible for injuries received by employees.

Many other interesting home events filled the 1906 newspapers. At Ormond Beach, Glenn Curtiss, motorcycle and airplane manufacturer, covered a mile in 26 and 2/5 seconds, on a motorcycle of his own construction, the fastest mile at that time. Cahill built the "telharmonium" in New York to transfer music to homes by means of eletricity. People read about wireless telephony (Collins); the city of Gary, newly created by the U.S. Steel Corporation; the simplified spelling of which even the inhabitant of the White House became a champion; the racial troubles that started at Brownsville among the colored troops; the murder at Madison Square Garden where the crazy millionaire Thaw killed White, a noted architect, owing to jealousy. Other pages brought news of grave disasters from all parts of the world:—an eruption of Vesuvius, an earthquake in Valparaiso, another one in Jamaica, and the worst destruction on 18 April in San Francisco where the quake and fire razed more than four sq. miles, killed over 500 persons, and damaged property to the extent of $300 million.

There were also days with sunshine, and good news. Peary reached 87°6′ Lat. North, the nearest approach by man at that time to the North Pole. The Duke of Abruzzi ascended the topmost height in the Ruwengi range in East Africa, and the Norwegian Amundsen navigated the Northwest Passage. In France, Humiére invented color photography, and in the Swiss Alps the Simplon Tunnel was formally opened. Shipyards built great ocean-going vessels, such as the Lusitania, with 32,500 tons, just about the time when the German Navy launched the first submarine in Kiel, some day to sink the Lusitania during the Great War.

Indeed, there was much reason for the man of 1906 to rejoice in life. Scientific institutes were erected, schools and colleges were founded, and cultural societies were established everywhere. A new wave of internationalism congregated many scholars at meetings in various parts of the world. In Boston, the Carnegie Nutrition Laboratory opened; in Chicago, a tuberculosis institute; at Heidelberg, a cancer research institute; at Frankfurt, a chemotherapeutic center. A school at Bruxelles began to educate young doctors for tropical service, and in Berlin a "house" was set aside for postgraduate studies. The Cambridge Pathological Society was also founded that year. There was an international exposition at Milano. Humanitarianism was shown by the conclusion of a new Geneva Convention. Among the Nobel-prize winners of the year there was Teddy Roosevelt, who received the peace award. The medical awards went to two neurologists, Camillo Golgi, and Santiago Ramón y Cajal.

The man of the street as well as the man about town had his heart full of songs which changed as quickly as the fashion in women's skirts. The year was the peak time of the vogue of "Sweet Adeline" which was always sung with concentrated sentiment put into the drawn-out tenor echoes:

> "In all my dreams (**Echo:** in all my dreams)
> Your fair face beams (your fair face beams)
> You're the flower of my heart, sweet
> Ad-e-line (sweet Ad-e-line)."

The mayor of New York was singing it, and some politicians were singing it in place of their prepared campaign speeches. Other songs of the year were the sentimental "Love Me and the World is Mine," the cynical "The Bird on Nellie's Hat," and the nostalgic "My Irish Molly O."

The medical profession of 1906 first heard of the sino-auricular node (Keith-Flack),

the aggressins of bacteria (Bail), synthesis of sugar from carbonic acid (Löb), acidosis in diabetic coma (Naunyn), and the accessory food substances (Hopkins), later to be called vitamins. The pathogenic agent of whooping cough was at last successfully cultivated (Bordet-Gengou), and the cause of general paralysis was recognized (Wassermann). Medical magazines of 1906 brought several diagnostic novelties such as pyelography (Voelcker), bismuth paste for x-ray studies (Beck), a serodiagnostic test for syphilis (Wassermann). Einthoven succeeded in transmitting, through several kilometers' distance, the electric current of heart patients who were sitting in a Leiden hospital, while he photographed the currents in his remote laboratory (telecardiogram).

In the same year, Bárány developed the theory of vestibular nystagmus, and described his caloric and pointing tests (for his fundamental studies he was given the 1914 Nobel Prize). New diseases were also described such as the auricular fibrillation (Cushny), asbestosis (Murray), allergy (Pirquet), etc. In 1906, nephropexy was perfected (Albarran), atoxyl was used for syphilis (Uhlenhuth), and an operative technic was introduced for the treatment of epididymitis (Hagner). Metchnikoff suggested yoghurt for longevity.

Fifty years ago the world mourned the death of such noted artists and scholars as Paul Cézanne, impressionistic French painter; Eduard H. Hartmann, German philosopher of the subconscious; Henrik Ibsen, Norwegian author of Hedda Gabler, Peer Gynt, and other tendentious dramas; Pierre Curie, French co-discoverer of radium, who was the victim of one of the earliest accidents with automobiles; John B. MacCallum, English cardiologist; Max Nitze, inventor of cystoscopy of the urinary bladder; Fritz R. Schaudinn, German protozoologist and discoverer of Spirochaeta pallida. Among America's losses of eminent persons there were in 1906 George R. Fowler, New York surgeon, who introduced plastic surgery of the chest; Robert W. Taylor, dermatologist; Marshall Field, millionaire dry-goods merchant of Chicago; and Russell Sage, another millionaire whose fortune was left by his widow to humanitarian causes.

And there are many more whom we could recall to commemorate during the 1956th year A.D. Some had built empires. Some had carved monuments. Others left their thoughts in print, script, music notes, drawings, or on painted canvas. Some are faded away to mere legends, and others are still histories . . . a long line of the children of Man, struggling along and trusting in a better Future!

". . . And some there be, which have no memorial; who are perished, as though they had never been" (Ecclesiasticus, xliv, 9).

PROMOTIONS

Brigadier General Paul I. Robinson, Medical Corps, U. S. Army, Commanding Letterman Army Hospital, San Francisco, California, to Major General.

Colonel Jack Schwartz, Medical Corps, U. S. Army, to Brigadier General, and designated Deputy Commanding General, Walter Reed Army Hospital, Washington, D.C.

Colonel Clement St. John, Medical Corps, U. S. Army, to Brigadier General. He is on duty at Headquarters USAFEUR, APO 403, New York, N.Y.

Medicine in the Confederacy

Part I

By

HARRIS D. RILEY, JR., M.D.*

INTRODUCTION

DURING the interval which has elapsed since the War between the States, the social history including the medical aspects has not been as proficiently treated as the military and political history. Material exists, not merely official, but in biography, memoir and diary, which can be drawn upon to explain those human and personal aspects of the War, and which serve best to explain the enormous and exhausting sacrifices both North and South made to keep intact the fighting front. As the smaller of the two adversaries, as the one compelled by the disparity in resources to give the greater part of its substance to the cause, the Confederacy represents, more than most communities at war, the devotion of the great bulk of her people to achievement of independence.

In the South, old and young, men and women, able-bodied and unfit were involved to a degree far more intensive than similar groups in the North, even in the sections which lay directly in the pathway of the invasions of Lee and Bragg. Further, the per capita cost of maintaining an army was very much greater for a white population of five and one-half million than for a wealthier section of twenty-two million.[1] These economic and social factors the Southern people were unable to balance by the skill of their leaders, or by the determination of her people, though for several years, it seemed as if such might be the case. The medical history of the Confederacy is closely tied up with the total effort of the South in this conflict.

The gallant efforts of the South against overwhelming odds, her quick formation of a government, her mobilizing of a splendid army, and the endurance by her people of ruinous poverty are matters of unquestioned fact and just pride to every Southerner and American. Most astonishing is the dramatic story of Southern resistance; the manner in which an ill-fed and half-naked command as it executed under Lee and his staff military exploits which would do credit to any well-equipped army. How such a ragged, suddenly assembled militia could often outmarch and out-maneuver the better-fed and better-armed Federal troops is still a military curiosity. The poor outfitting and the underfeeding of the Confederate troops were not due to the indifference of the Southern people but rather to the poverty of the population and the immense difficulty of supply in such a quickly formed nation with its inadequate transportation. Equally staggering were the difficulties which faced the Surgeon-General of the Medical Corps in securing drugs and supplies, and organization of medical facilities for the thousands of wounded and sick who came constantly into the hands of his staff during the intensive fighting in Virginia, Tennessee and elsewhere. The conflict of the sixties was one of the greatest of all wars. Eight billion of the treasury of the North and South was consumed in the struggle;[1] battles raged over an area from Pennsylvania to Florida and from Washington City to the plains of Texas. Peaceful hamlets which had never beheld marching men suddenly became positions of importance, fought over by opposing thousands. Overnight they were compelled to transform themselves into hospital cities for a host of wounded.

The War between the States was fought in the very last years of the medical middle ages. It was an age of crudity in medicine

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and surgery. While the guns were firing throughout the South, Pasteur was laying the groundwork for bacteriology and, within two years after Appomattox, Lister was beginning the application of his aseptic method Recovery from any wound or disease was infinitely more difficult than today.

The care of the sick and wounded has always been a major problem of military operations. It is customary in reckoning the total number of ineffectives in a campaign to double the military casualties in order to obtain the true number of men withdrawn from actual military duty.[2] Usually in advance of a military engagement provisions were made for casualties amounting to at least 10% of the troops involved. The total forces of the Confederate armies did not exceed 600,000 men, in fact only 100,000 during the last year, as compared to a Union strength of 2,800,000.[3,4,6] To care for this number of Confederate troops there were fewer than 3,000 medical officers,[3] according to one estimate a ratio less than one-half that provided for a modern army.[2] In the entire Confederate army there were but 24 medical officers who had seen previous military service.[2] To grasp the enormous task of the medical service one must realize that more than 3 million cases of wounds and disease were cared for by the officers of the Medical Corps of the Confederacy during the War, a number greater than the total enlisted strength of the Union Army and probably at least three times greater than the complete Confederate personnel.[3] In addition they were responsible for the medical needs of 250,000 Federal prisoners.[1] From this it can be seen that on the average each Confederate soldier was wounded about six times during the War.[2] One-third of all the men engaged on the Confederate side were either killed outright on the field or died of disease and wounds.[3,50] One-third of the entire army was thus at one time or another receiving medical care for wounds, while most if not all of the entire body of 600,000 men were sooner or later under the care of the medical department for treatment of disease.[3]

Organization of the Confederate Medical Service was authorized by Act of the Confederate Congress, February 26, 1861, but on April 27 the Secretary of War wrote President Davis that "the medical department of the Army has not yet been organized."[5] It is indicative of the tentative nature of this measure, passed before actual war had begun, that it provided specifically for but ten surgeons and assistant surgeons under the surgeon-general, though it provided for the appointment of as many assistant surgeons additional to these, as the War Department thought indicated.[7] As the head of the medical department, President Davis appointed Dr. Samuel Preston Moore, of Charleston, South Carolina, and Little Rock, Arkansas* (Fig. 1). Born in 1813, the new Surgeon-General had graduated from the Medical School of South Carolina in 1834 and for

FIG. 1. SAMUEL P. MOORE, Surgeon General of the Confederacy

* There is some confusion as to the actual date of Moore's appointment and whether or not there was a temporary predecessor. (Official Records IV, vol. 1, 1176; Confederate States, Statues at Large, Provisional Congress, P. 38; Bull. Med. Library Assn. 30; 279, July 1942.)

26 years, almost to the outbreak of the War, he performed skillful service in a variety of difficult posts in the U. S. Army. He served in the Mexican War, during which he was promoted to the rank of full surgeon, and was with the United States forces through much of the barbarous Indian fighting of that period. When called to head the Department of the Confederate Army he was practicing medicine in Little Rock, Arkansas.[8] A few years after the war, a leading Southern newspaper[9] editorialized that, "Dr. Moore had nothing with which to equip a hospital service or surgeons in the field; yet during the four years of the War he furnished tons of supplies, built dozens of hospitals, established a complete service, and supplied the drugs that saved thousands of sick and wounded men." Thus, the Confederacy, engaged in its long conflict, gained at the outset a capable head for its medical department, a man of sound training and of long experience in army service. Though a studious gentleman, he was efficient, forceful and a strict disciplinarian. The importance of these qualifications can hardly be overestimated, since he was to be compelled to use the most drastic kind of economy in material and was also to be forced to maintain, largely by his strength of purpose and personal influence, a department too often slighted by the purely military arm. When we realize that the medical staff is responsible, not only for aid to the sick and wounded, but also for the sanitation of camps, garrisons and of troops on the march; that it must administer its own personnel, and that its members are frequently called in to give expert advice to officers of the line, we cannot but be impressed. How successfully the staff of Moore was molded into shape to meet this dread responsibility we must seek now to inquire.

The Work of Organization

The Surgeon General's department, however, was merely the skeleton of the later vast organization. No battles had occurred as yet; it was still hoped by many that conciliation would be possible. At any rate, by the appointment of Dr. Moore, the Confederacy had determined to gain expert and experienced medical assistance. The obstacles which confronted Moore, quite evident when the field of the first Bull Run rendered pitifully inadequate the small medical facilities of the Department, were of such a nature that a less determined man would have been discouraged. He had no staff of surgeons or nurses worthy of the name; there were in the South no good laboratories or chemical manufacturing establishments; the difficulty of importing drugs and medical supplies was bound to become very great, should the blockade already proclaimed by the North be successful. Undaunted by the task before him, Surgeon-General Moore proceeded with plans for an extensive medical department which would include, besides the head, who bore the rank of brigadier-general, one thousand surgeons with rank and pay of majors of cavalry, two thousand assistant surgeons with rank and pay of captains of cavalry, and an indeterminate number of acting assistant surgeons, to be enlisted as occasion might demand.* [1] Moore obtained the services of 834 surgeons and 1668 assistant surgeons for the Army; in addition, 92 medical officers were appointed to serve the Confederate Navy, also under Moore's direction.[2] Seven hundred and seventy-five of these physicians were natives of Virginia.[2] All told they constituted, with their acting or "contract" members, something under the staff Moore had planned. Comparison of the abilities or skills of the Confederate physicians with their northern adversaries is manifestly impossible but it is of interest that Chief Surgeon Stout[10] of the Confederate Army of Tennessee wrote, "No army ever entered the field with better educated medical officers although they were relatively few in number." The Surgeon-General was to administer the hospitals and to regulate the activities of the medical officers at the front. Subordinate to the chief of the department were a medical

* The full surgeons with rank of major received $160 per month and the assistant surgeon $110 per month.[1, 46]

director for each field army or corps, a chief surgeon of each division, a senior surgeon for each brigade, and in each regiment a surgeon and his assistant. In addition, each hospital had a director besides its quota of surgeons and assistant surgeons. Further, in the hospital unit, there were stewards with the rank of sergeant, who often were medical students having an understanding of drugs; a matron to each 20 patients, a ward master to each ten patients, and a cook to every thirty hospital inmates.[2] It was frequently stated that perhaps Dr. Moore's greatest ability lay in his capacity to select medical men of fine skill and intelligence to work with him.[1] He built a large and efficient organization within a very short period of time, no mean task when one recalls the conditions under which the hospitals of the South functioned.

The headquarters of the Surgeon-general's staff was in Richmond, where two houses, one of them also used as a dwelling by Moore, held the records and papers of the Division.[1, 2, 8] The burning of these buildings by the Federals when Richmond was captured April, 1865 resulted in the destruction of these documents which would be of great service in reconstructing the medical department's history at the present time. It must be remembered that the work of organizing and conducting the medical bureau of the Confederacy was operated from Richmond, a city cut off from all communication with the outside world by blockading squadrons and almost encircled by a hostile army. This fact strongly emphasizes the initiative and resourcefulness of the medical men of the South in the 1860's.

There was some confusion in the early stages of the War regarding the status of surgeons and their staffs. This question was put in way of settlement by Dr. Hunter McGuire with the sanction of his commanding officer, the famous General T. J. "Stonewall" Jackson. Following the route of General Banks at Winchester in May 1862, the entire Federal hospital division was returned to the enemy, under a flag of truce. This humane act was motivated by the belief that since the medical staff did not make war, its members should be free from some of its penalties.[1] It is to the credit of the North that this order, accepted by General Lee as his policy, became the Federal attitude as well; by an order dated April 24, 1863, surgeons were to be exempt from confinement in war prisons.[8]

A basic problem of the Department was the securing of supplies of needful drugs, especially opium, quinine and chloroform. A solution of the situation was sought in three ways: they could be run through the blockade, together with arms and ammunition, in exchange for cotton. This process of supply, arranged in England and France mainly by a number of agents, was comparatively easy during the early stages of the War but became increasingly difficult after 1863, when the Mississippi and Gulf communications were interrupted and the blockade was becoming effective. The department took over those medical supplies which the states had seized from the army posts situated within their borders. Another method of obtaining the needed drugs was by capture or by passing them disguised through the enemy lines. Capture of baggage trains by the efficient Confererate Cavalry accounted for much more, just as such raids frequently supplied the soldiers with food, arms and clothes. The most ambitious manner of providing these necessary articles was by determining whether substitutes for the scarce commercially prepared drugs might be found or cultivated. To such an end, Moore directed a letter to the various medical departments on April 2, 1862, enclosing a pamphlet describing the leading medicinal plants and ordered collection of such plants.[54] To assist this work the Surgeon-General established a number of laboratories, there being seven such facilities for the manufacture of medicines in the Confederacy in 1865.[1] To his friend, F. P. Porcher of Charleston, he suggested that he prepare a book on medical botany, for the use of the department.[8] *Porcher's Resources of Southern Fields and*

Forests, published in 1862, was a valuable and interesting contribution to a vital subject. Some of his suggestions are of interest; mulberry root could replace alum; blood root for digitalis; cottonroot for ergot; wild jalap for ipecac; dandelion for calomel; hops and motherwort for laudanum; as diuretics blackberry and dogwood were recommended; for rheumatism, mountain laurel was a suggested remedy; diarrhea could be treated with a preparation of knotgrass; stramonium leaves were reported efficacious in fever and heart ailments.[55, 56] The Department also sponsored the growth of native poppies for opium manufacture in Florida and in North Carolina and although not totally successful, some of the native opium was actually used in surgical cases.[8] To obtain necessary stimulants the Department also operated a number of distilleries, after unfortunate experience with contracts with the various states for the supply of alcoholic liquors.

To increase and coordinate the amount of useful information which might be at the service of the medical staff at all times, Moore founded the Confederate Association of Army and Navy Surgeons in 1864 and in the same year began the publication of the *Confederate States Medical and Surgical Journal.*[57] Though both of these projects were extinguished by the conclusion of the War, an examination of the rare numbers of this short-lived journal and of the minutes of the Association, reveals the probable service which both contributed to the better medical care of the soldier and in building the Medical Department.

Several works were published on military medicine during the conflict and include *A Manual of Military Surgery for the Use of Surgeons in the Confederate Army* by Julian Chisholm; in 1862, *An Epitome of Practical Surgery for Field and Hospital* by Edward Warren; *A Manual of Military Surgery* prepared by order of the Surgeon and published in Richmond in 1863, and a few less well known ones. Because most of the medical journals in the South were forced to suspend operations, we gain a large part of our knowledge from résumés of military medicine which appeared in medical periodicals shortly after the fighting closed. Two of the better known and most widely read were *The Nashville Medical and Surgical Journal,* the editor being Dr. Paul F. Eve, and the *Southern Practitioner* with Dr. Deering J. Roberts as editor and proprietor, both being published in Nashville. The latter journal served as the official record of the Association of Medical Officers of the Army and Navy of the Confederacy.

The continuance of the War beyond a period which the more optimistic of both North and South, thought likely, made necessary a more permanent system of filling the staff with trained physicians. For this purpose, an examining board was set up in Richmond to test the qualifications of men applying for appointments as surgeons or assistant surgeons of the Army.[1] The precise date of such a policy is uncertain, but it is certain that such antedated December 1861, for in that month the report of Secretary of War Benjamin to the President contained a glowing account of how sharply the incidence of camp diseases had fallen since the establishment of examining boards.[12] Another impression of these boards is gained from the writings of a medical officer of Mosby's command when he stated that of the five examiners present when he appeared before the board one had never received an official medical degree, one owed his promotion to nepotism, and a third was very drunk.[2] The original examining board met over DuVal's Drug Store in Richmond to test candidates. Later in the War, at the suggestion of General E. Kirby-Smith, in command of the Trans-Mississippi Department, the departmental commanders were given the power to name examining boards as the need arose.[1]

The initiation in April 1862, by the Confederacy of compulsory military service for males 18 to 45 years, put another heavy burden upon the medical staff, for at each enrolling station medical officers had to be present to determine physical fitness and to care for those temporarily incapacitated as

well as carrying out vaccination of each inductee.[13] In general orders published by the Adjutant-General on February 23, 1863, no exemptions were to be granted for "general debility, slight deformity, deafness, impediment of speech, organic heart disease, most kinds of rheumatism, hemorrhoids, loss of one eye, loss of two fingers, and single reducible hernia."[14] Paper work, the bane of military life, was a tax upon the patience of the Confederate medical officer and a constant reminder of the despised but indispensable red tape. The regulations of the medical department of the Confederate States, published by the authority of the President, appeared first on November 19, 1861 and required innumerable reports and returns to be filed.[2]

We may realize from this brief analysis the energy with which the Surgeon-General and his busy staff tried to see to the needs of hundreds of thousands of sick and wounded men. They administered a staff of more than 2500 duly enlisted surgeons and their assistants, with an uncertain number of contract surgeons, as well as other medical personnel and hospital attendants. They opened new hospitals, closed others, requisitioned supplies, purchased and shipped medicines, argued with the military men as to hospital personnel, fought with determined state officials for their many projects within the latter's boundaries. In all they encountered ignorance, conservatism, prejudice, the personal jealousy of many and lack of comprehensive vision.[1, 15] A major problem apparently was the constant controversy over furloughs for convalescents. One gains the impression that the situation was somewhat different in several of the Confederate cavalry regiments whose base of operations were never long in any one place. It appears that the regimental commander rather than the medical officer frequently made this decision. The most famous of the Confederate cavalry leaders, General Nathan Bedford Forrest, apparently accepted this obligation as his own also as illustrated by the following brief but crystal-clear rejection of a request for a convalescent leave: "Although he lacked formal education, Forrest had no trouble in conveying his meaning by pen. His surviving writing is clear, direct and distinctly to the point, despite unconventional spelling. He would not be bothered with such extra and entirely unnecessary letters as the 'A' in 'Hedquarters,' nor did he pay attention to such letters as the silent 'GH' in so simple a word as 'fite,' for example. He spelled as he fought, by ear, but there could be no room to doubt his meaning when he wrote across the face of a three-times persistently repeated application for a convalescent furlough, 'I hav don tole you twict goddamit no.' "*

The Surgeon in the Field

Having formulated a general idea of the difficulties and problems of the Surgeon-General's office and of the skeleton of his large organization, it is necessary to remind ourselves at this point that the medical department did not function at Richmond alone. To understand more fully the work of caring for the Soldier we need to visit the Confederate armies in the field, and march into action with the surgeon as he rides or trudges beside the war weary troops. Before the stress of War had wrought havoc with the uniforms of all branches, the Confederate surgeon presented a creditable, even an impressive appearance in his colorful ensemble.† Of course, as goes without saying, the surgeons were hard put to obtain uniforms, or any kind of clothing at all, as were the rest of the Army as the exigencies of war began to be felt. Though they might be exempt from some of the penalties of war, as imprisonment when captured, they were not free from the dangers of combat, which often disposed of medical officers venturing near the firing line just as readily as the fighting troops. The only casualty suffered by the command of General J. E. B. Stuart in his

* Mathes, J. H.: General Forrest. (New York, 1902.)

† For details of the Confederate surgeons uniforms see Official Records, Series 4, Vol. 1, P369-373.

famous cavalry encirclement of McClellan's forces in Virginia was a medical officer, Dr. Latrane, victim of a sniper's bullet.[2]

Early in the morning, regimental sick call was sounded and the assistant surgeon ministered to any of the men requiring treatment. Dr. Wm. H. Taylor wrote that: "All complaintants were asked the same question, 'How are your bowels?' If they were open I administered a plug of opium if available; if they were shut I gave a plug of blue mass (an unstable mercury compound carried in his kit)." When the regiment went into action, his case of instruments, which he was supposed to guard with his life and his supply of home-made bandages, came into use. Splints were scarce; in instances, a fence rail and other makeshift devices were used to splint fractures. After tending the sufferers injured in the engagement, the medical officer transferred them via hospital wagons to the field hospital. The securing of adequate surgical instruments was difficult, especially late in the War. Capture secured some, others were manufactured in Richmond, some represented the unselfish contribution of the widow of a deceased physician.[18]

Meanwhile the regimental surgeon had secured a sheltered place back of the lines, perhaps in some farm house, or in a protected ravine or grove. Here he received the stream of wagons, many of them being of a rough, makeshift kind, laden with the wounded. With whatever means at his command he amputated arms and legs, sometimes with little or no light, often without the use of chloroform or other anesthesia. He had thus to be impersonally helpful, and for humanity's sake indifferent to the suffering of men, when such could not be helped. He had above all else to be resourceful; sometimes a strip of bark served as a tourniquet, the juice of the persimmon as a styptic, a knitting needle in place of a tenaculum, even a penknife as a scalpel.[19] Modern neuro-surgeons would shutter could they see the Confederate surgeon elevating depressed skull fractures with an ordinary table fork. Sometimes soft pine wood was employed to probe for Minie balls. If the battle were a major engagement, such as Antietam or Gettysburg, or in addition a prolonged campaign, like the Seven Days fighting around Richmond, the conditions were far worse and the slender resources of the Medical Department of the Confederacy were exhausted long before the wounded were properly cared for, the main burden of care and feeding of the wounded then to be borne by the populace in the district of fighting.

The ambulances used by the Confederates to convey the wounded to places of safety or to railroad terminals, en route to the general hospitals, were generally poor affairs, except for the captured variety. Generally they were springless, drawn by mules, and were covered with canvas held in place by oak branches.[21] It is small wonder that the wounded Southern soldier often preferred to walk to the regimental hospital rather than go by ambulance if he was at all able to undertake such a journey. It seems likely, from a brief examination of field ambulance service, that it was always deficient, sometimes totally lacking. This lack had to be supplied by utilizing such wagons as the neighborhood provided.

It might be said that, as the commanding officer's job was to lead his men into action and to conduct that action, in so far as his power lay, to the military advantage of the Confederacy, it was the medical officer's painful and grim duty to clean up the battlefield. The engagement won or lost, he became the most important man of the entire force, since it depended upon his efficiency, coolness, and dispatch how soon the command would be able to maneuver or stand a new action; sometimes even whether it would ever be able to exist again as a military organization. This arm of the field service had to function well, or the army must soon disperse or be captured. One cannot help but constantly compare the situation existing in the 60's with the brilliant medical results of World War II and the Korean conflict. This only lends emphasis to the tremendous changes

wrought by antibiotics, chemotherapeutic agents, the use of whole blood and plasma transfusions, as well as the increase in medical and surgical skill. However, the basic organization of the modern medical corps with its receiving hospital, battalion aid station, and mobile surgical hospitals is not greatly different from that of the Confederate service.

Surgery in the Army

While the immediate care of the wounded was a problem of the battlefield and regimental surgeons, the seriously wounded who survived ultimately found their way to the general hospitals. In Virginia alone, there were more than 194,000 wounded during the course of the War.[2] Surgical practice in the War between the States is well set forth in a *Manual of Military Surgery* prepared for the use of the Confederate States Army by order of the Surgeon-General and published in 1863. Gunshot wounds of the abdomen, particularly those penetrating a viscus, were regarded as almost certainly fatal. Except when it was necessary to return protruding viscera, no operations were attempted, it being believed that when this important cavity was once penetrated, death was the inevitable result, and the surgeon could do little more than to soothe and relieve the patient by administration of opium.[22] Wounds of the chest were regarded as hardly less serious. If the patient be sufficiently strong, bleeding from a large vein until syncope intervened was advised.[22] Toward the latter part of the War, the status of bleeding was becoming more and more doubted.[23]

Wounds of the face, head and neck constituted about 12% of the toll.[1, 2] Trephining was resorted to only when the depressed bone was leading to permanent interruption of cerebral function, or for evacuation of an abscess.[22] Gun-shot wounds of the extremities, constituting about 65% of all wounds, was the chief field for surgical intervention.[2] After first aid upon the field of battle, wounds were more carefully examined, foreign bodies probed for and removed, splints readjusted and fresh dressings applied at the regimental or general hospital. Dressings for the most part consisted of lint, kept wet by water dripping from a can and were often covered with oil silk. Sometimes creosote or some other disinfecting fluid was laid over the wounds to keep the flies away. Chief of the complications were hemorrhage and infection described as the terrors of the surgeon as well as the patient.[22] Should digital pressure, styptics and the administration of opium fail, ligation was resorted to by means of Sadler's silk or occasionally cotton threads twisted to the proper size.[22]

Another important surgical procedure of both battlefield and hospital was amputation. The extent to which this mutilating operation was resorted to is appalling. It was early a surgical dictum that practically all gunshot wounds of the femur and penetrating wounds of the joints were fatal, and that immediate amputation offered the only opportunity for recovery. During the battles around Richmond in the summer of 1862, there was performed in Richmond hospitals one hundred and thirty-two amputations of the leg with a mortality of 43%; 172 of the thigh with a mortality of 59%; 45 of the forearm with a mortality of 13%; and 192 of the arm with a mortality of 28%. During a six month period in 1862, 201 cases of gunshot wounds of the thigh accompanied by compound fracture were treated without amputation with a mortality of 60%.[2] An observer commenting upon these figures remarked that "this calculation is based upon the reports of Richmond hospitals and gives far more favorable results than has been obtained in less well equipped facilities."[24]

Chloroform was the anesthetic of choice in the Southern Army while ether was favored in the Union command. This partiality continued, at least in Virginia, for a long time after the War and was the subject of bitter controversy. One suspects that it was largely the reflection of an old animosity taking a remote way of expressing itself. Although there were 37 deaths from chloroform and 3 from ether reported for the

whole period of the War on the Northern side, Southern surgeons claim there was no danger of chloroform anesthesia properly given.[2] Hunter McGuire declared that "in the corps to which I was attached, chloroform was given over 28,000 times and no death was ever ascribed to its use."[19]

The Confederate's attitude was most eclectic in his ideas on disease but extraordinarily confused, or they would be, if he took seriously the official Confederate Table of Disease. Hospital gangrene wasn't listed there until 1864 and then appeared with the local diseases of skin and tissue. Traumatic erysipelas was listed with gunshot wounds, fractures and military executions, while idiopathic erysipelas appeared as a "continued fever."[23]

The surgical disease, hospital gangrene, tetanus and septicemia, were principally responsible for the delayed mortality among the wounded in general hospitals. The surgeons of the day were still in the period of "laudable pus." They believed that suppuration was a normal and necessary part of the tissue repair and were astonished when an occasional wound healed without it.[23] Hospital gangrene occurred most often in the lower extremities and was ushered in by acute pain, cold sweats, characteristic changes in the affected limb and death usually within 14-16 hours. The suffering of the patient and the nauseous putridity of this disease gave a horrible aspect to this dread condition. Previous military experience warned of the danger of tetanus which was classified as traumatic when it followed in the wake of wounds of all descriptions, and idiopathic when it was supposed to depend upon the exposure to cold, damp, intestinal irritation and intense mental excitement and other vague causes.[22] Although one surgeon wrote that tetanus as a complication was rare, we find the Association of Army and Navy Surgeons of the Confederate States on February 13, 1864, for a second time, considering a report of the disease, this time of 26 cases.[2] Erysipelas was regarded as a constitutional disease with local manifestations to which the patient was predisposed by dampness, intemperance, bad diet and the like.[22] Septicemia, likewise was believed to be influenced by the "epidemic constitution of the atmosphere," and was regarded as a terrible scourge counting for 43% of all primary amputations.[22]

It should be emphasized that just as the field surgeons had in their hands the welfare of the command during its period of campaigning, the hospital physicians had the enormous responsibility of providing replacements from the ranks of convalescents as soon as possible, by effective surgery and hospital care. Their responsibility was even more serious when the fortunes of war struck down highly trained general officers whose presence was well nigh indispensable to the progress of a campaign. The exposure of these men to danger was constant and frequently fatal since the high casualties among them was a matter of common knowledge. For instance, at Fair Oaks, Virginia in May 1862, General Joseph Johnston was seriously wounded, thus depriving the Confederacy of its ranking field officer at the outset of the critical Richmond campaign. General Robert E. Lee died in 1870 at the age of 63 of what was probably a vascular accident terminating cardio-vascular disease manifest as early as the battle of Fredricksburg in 1862. At that time he suffered from "a sore throat that resulted in rheumatic inflammation of the sac enclosing the heart."[2] At the battle of Franklin, Tennessee in 1864 General Patrick Cleburne and 10 other general officers of the Confederacy were killed, wounded or captured.[48] Many feel that the death of Albert Sidney Johnson at Shiloh was one of the turning points of the War in the West.

The story of the wounding and death of the celebrated Confederate leader, General Stonewall Jackson is well known to all, but some phases of it will make clear how difficult was the position of the surgeons and how patiently they worked to repair the loss. Jackson's command, strongly enforced by Lee, had struck the Federal right with much

success at Chancellorville and the battle waged on into the evening. The details of General Jackson being wounded by a volley of rifle fire from a North Carolina regiment of his own command is known to all. Jackson was struck by three of the shots, one in the right hand and two in the left arm, one of which severed the main artery. His horse, terrified by the shots, galloped toward the Federal lines, scraping her rider against the brush and nearly unhorsing him. After securing the horse and rider, Jackson's men prepared to move him quickly from the field. His last order was to General Pender to the effect "that the field must be held." While hurrying the General away, one of the bearers was struck down by enemy fire, allowing the litter to fall to the ground with considerable pain to the patient. A few hundred yards away, Dr. Hunter McGuire met the sad procession with an ambulance. Jackson told his faithful medical officer that he believed he was dying. The corps surgeon adjusted the handkerchief which General A. P. Hill had hurriedly bound about his arm as a tourniquet, gave him whiskey and morphine and started the wagon north to the infirmary at Wilderness Tavern, pressing the severed artery hard with his fingers to control hemorrhage. After placing the patient in bed, more dilute whiskey was administered. After 2½ hours an examination of the wounds was made; the patient was then told at 2:00 Sunday morning in the presence of three other surgeons, besides Dr. McGuire, that chloroform would be given him and a more minute examination of the wounds made, it being probable that amputation of his left arm would be necessary. If such was the case, and the patient was willing, it would be done at the time of the examination to which the General consented. Dr. McGuire first extracted a round bullet from a Springfield rifle from his right hand, it having shattered two bones of that hand. He amputated the left arm about two inches below the shoulder joint dividing the main artery and fracturing the bone. In the other, the ball had entered from the outside of the elbow and had emerged on the opposite side above the wrist. Two or three lacerations on the patient's face were dressed. About an hour later, he recovered consciousness and Major Pendleton, Assistant-Adjutant General of the Corps, called with the news of the battle. Jackson listened attentively to the report but was unable to give orders to his subordinates. After an effort to do so, he said "General Stuart must do what he thinks best." Later in the morning, he had pain in his right side but since the skin was not injured, it seems at the time likely due to a minor injury occasioned by the fall from the litter. By night, the pain had disappeared and he rested well. Moving the next day to the Channel House farther from the front at the insistence of General Lee, he seemed to take a turn for the worst, complaining of nausea, which was treated by wet applications to the abdomen. After this, he ate well and seemed cheerful. Also the wound seemed to be healing, the arm stump being covered by a normal granulation and the hand appearing improved. But on Thursday morning early he was taken with severe pain which proved to be caused by pneumonia of the right lung. His physician prescribed antimony, opium and mercury with some degree of improvement ensuing. On Friday, the wounds continued healing, the pain in his side had disappeared but his breathing was difficult. Saturday he was considerably weaker. On the following day, Sunday, he became delirious and he frequently spoke as if in command upon the field giving orders in his customary way. Later, during the day, he expired.[2]

The details of this, the most important surgical problem which a Confederate surgeon was compelled to meet, has been subjected to controversy regarding the treatment which Jackson received. And there have been opinions expressed that McGuire and his attending surgeons made errors in Jackson's case that were probably fatal. Before passing criticism on McGuire's amputation of Jackson's arm, it should be remembered that the experience of every war, up to the War between the States, had more and

more confirmed the advantage of amputation. It was stated unequivocally in a textbook widely used at that time "that every hour the humane operation is delayed diminishes the chance of a favorable issue."[25] Other dissenters have postulated that the use of cold applications for nausea was the cause of the pneumonia and the fatal determination. Specifically it seems that the pulmonary infection began too soon after the use of the applications to possibly have been caused by it. We must accept the death of Jackson as a calamity of war, as an incident which not the best skill and care of the best men of the medical corps were able to avert.

(To be concluded)

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NEEDLELESS JET SYRINGE

U. S. Navy Photo

CAPT. E. A. ANDERSON, MC, USN, examines the new type syringe.

The Army's automatic jet inoculator was loaned to the U. S. Naval Air Station, Norfolk, Va., for its first use on a large scale immunization of military personnel. This syringe was developed at the Walter Reed Army Institute of Research, Walter Reed Army Medical Center. Active in its development were Lt. Col. Robert B. Lindberg and Dr. Joseph E. Smadel. Said to be quicker (2,000 injections in 8 hours) and less painful than the needle-type syringe the new syringe will be used in the immunization of many thousands of military personnel and their dependents with influenza vaccine.

EDITORIAL

Medicine and Morale

NEW YEAR'S DAY is a day of reflection and rededication. A year ago, our journey started anew, and our journal put on a new coat and a new ribbon on its hat. We felt that, in our modern era, the interests of the Association and its individual members have expanded over a very wide field so that MILITARY MEDICINE was a more accurate denomination for our official magazine than the former Military Surgeon.

Indeed, military medicine is now almost identical with global medicine itself. Its humanitarian problems are the same all over the world, from Reikjavik to Cape Town, from Washington to Moskva, or from Anchorage to Little America. Only the ideology of the governments which the military doctors serve may be different. In spite of the wider range of his science, the military surgeon of today has the same basic task as confreres in the ancient times of the Homeric heroes, in Trajan's campaigns, or during the Hundred Years and Seven Years Wars. The importance of the medical service for the maintenance of national forces has not changed. Only the color of the surgeon's coat would look different in a historical parade.

Throughout the ages and across many lands, generations of heathen and Christian doctors passed by, marching along with the troops and camping with the fighting forces. All of them showed a common attitude toward the wounded and sick, a desire for soothing the sufferer and saving the lives of warriors. Such unity of purpose is the safest guarantee of the great international agreements for the humanitarian conduct of wars and of the vows of world-leaders for the preservation of the human race.

The strength of divisions and legions in wartime greatly depends upon the work of physicians. But in peacetime also, when our armed forces guard the ramparts of the world from possible unpleasant surprises, the health and spiritual welfare of our defenders is mainly sustained by a well-catenated chain of medical service. Adequate medical care of our people is an essential part of both military and civilian morale. Cuts in medical services are, therefore, economically false, and morally dangerous.

Our military leaders have repeatedly urged that the existing medical organization of the country's defense should be strengthened and further extended to include not only the serviceman but also his family. After all, a nation's smallest organizational unit is not the individual but the family which is also the natural training unit of good citizenship. Our own Association, at its latest annual meeting, strongly supported these views, and submitted a resolution for legislation to provide more adequate medical service.

Let us start the New Year with the reiteration of the hope, expressed by our Association's President, that all medical forces of the nation be marshalled in a concentrated effort to provide in the near future adequate medical preparedness, "so essential to the defense of our birthright and country."

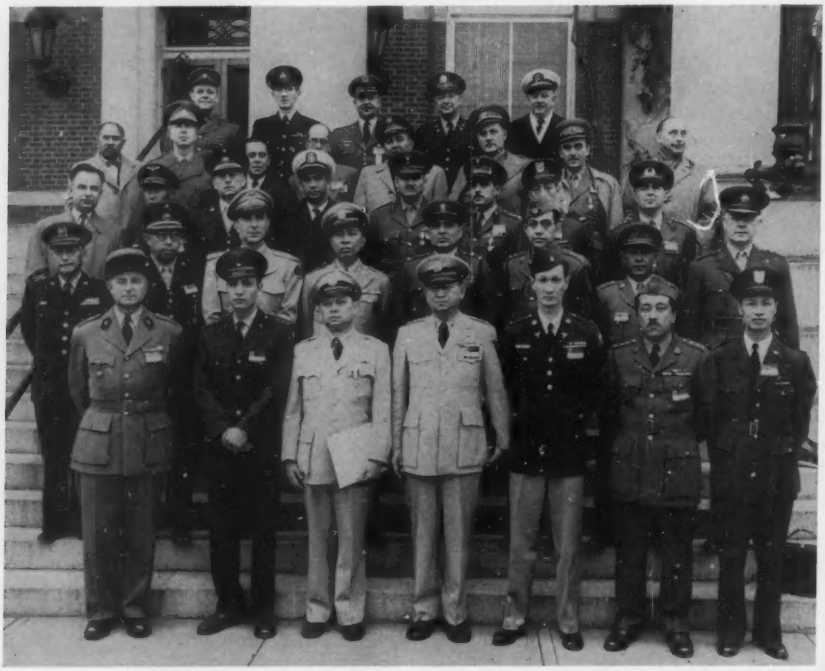
At the entrance of the New Year we wish a new era, a renaissance of military medicine and a new birth for medical service. Manpower requires medical power for its maintenance, just as much as tanks, ships and planes require a trained crew of repairmen. Only a healthy body can keep a healthy mind and spiritual integrity which alone provides a foundation of strength.

Let us hope that, in a world of cynical

harshness and materialistic philosophy, the military surgeon, reborn in spirit and encouraged in service, will find further means and opportunity for strengthening our national defense so that our people will have nothing to fear for the future.

FOREIGN DELEGATES VISIT WALTER REED ARMY MEDICAL CENTER

As one of the events of the post convention activities planned for the foreign delegates to the 62nd Annual Convention of our Association there was the visit to the Walter Reed Army Medical Center. They toured the Walter Reed Army Hospital and viewed new x-ray and isotope equipment.



Front Row (L to R): Col. Maurice Duval, France; Capt. Hossein Saheb, Iran; Major T. Dhtrathumrong, Thailand; Col. Chom Saradatta, Thailand; Major Enrique S. Filart, Philippines; Col. M. A. Al Imam, Iraq; Major Surg. Nguyen Danh Dan, Vietnam.

Second Row (L-R): Maj. Gen. Tchi-Waang Yun, Korea; Lt. Col. Victor A. Nunez, Peru; Col. A. Torres de Anda, Mexico; Col. Samut Jatinandana, Thailand; Col. S. Rameshwar, India; Col. Dr. Rashad Al Abdul Wahid, Iraq; Lt. Col. Maung Maung Than, Burma; Col. Chas. M. Stuart, Ireland.

Third Row (L-R): Lt. Col. Cihat Borcbakan, Turkey; Col. C. K. Park, Korea; Major Alfonso Montagne, Peru; Lt. Carlos E. Peralta, Dominican Republic; Brig. M. Nassar, Egypt; Col. M. El Naka, Egypt; Capt. Surg. Dan Van Chieur, Vietnam; Col. Ziver Berkman, Turkey.

Fourth Row (L-R): Col. M. Ata-Ullah, Pakistan; Col. Gustav Nesselblad, Sweden; Lt. Col. Jose D. Rojas, Colombia; Lt. Col. J. E. Ucros, Colombia; Capt. Jacobo A. Alvarez, Dominican Republic; Surg. Gen. Gojko Nikolis, Yugoslavia; Maj. Vladimir Todorivic, Yugoslavia; Dr. Erich Bock, Germany.

Fifth Row (L-R): Major Fred S. Hogarth, Canada; Squadron Ldr. J. Grantley Shelton, Australia; Col. George Green, USAF (MC), Chief, Med. Team, Dir. of Intelligence; Maj. Gen. Leonard D. Heaton, Commanding General, Walter Reed Army Med. Ctr.; Dr. B. J. Olson, Med. Dir., USPHS.

Around the World

By
CLAUDIUS F. MAYER, M.D.

SWEDEN and other Scandinavian countries rank very high among the promoters of medical progress. Located on the outskirts of western culture and civilization, they are also strong points in the global defense of western ideology. Sweden's chief medical centers are Stockholm and Lund; to the latter are also attached the clinics of Malmö. Upsala gained reputation chiefly by Theodor S. Svedberg's work in colloid chemistry and ultracentrifugation, and by Tisselius and Pedersen's studies in electrophoresis of the proteins. Though in Sweden, as elsewhere, medical research has been carried out mostly by teams of specialists, the piece-meal methods of research teams have not yet destroyed the unity of medicine that had been preserved for us in the hands of the practitioners only.

In the town of Örebro, Middle Sweden, a mysterious epidemic ailment occurred. In a number of people, a papule appeared over the elbow. The papule grew first to a soft, spongy tumor of the size of a bean; then, it ulcerated, then slowly healed in one to two years. A careful study detected that the papule developed on only those people who went to a certain swimming pool where they accidentally rubbed their elbows against the concrete wall of the pool. The benign papule yielded a hitherto unknown acid-fast bacterium which was named Mycobacterium balnei.

A Stockholm doctor (Borgström) suggested that essential hypertension could be cured with biweekly intramuscular injections of estrogens (6 mg.), androgens (10 mg.), and some gluconate of calcium (5 ml of a 10% solution). Members of the State Bacteriological Laboratory at Stockholm announced the production of an immune serum against cancer. The new serum was obtained by repeated subcutaneous injections of a mixture of pooled cancer cells into horses. Therapeutic tests with the serum showed that the new remedy is able to destroy human malignant tumors.

The small, vulnerable Sweden is not a member of the NATO pact. It found, however, that neutrality alone is no defense in the thermonuclear age. In its own protection, Sweden follows the principle that it is cheaper to dig caves in a mountain than to erect buildings on the surface. The Swedish government started, therefore, a huge-scale construction of underground shelters where, together with the needed supply of food and drugs, the entire population of the country can hide against weapons of an aggressive enemy. For the Swedish Navy, which is composed of about 150 vessels of all types (destroyers, submarines, etc.), there are coastal rock tunnels available to hide. At present, more than 500 military rock shelters of various types and dimensions, including subterranean hangars for aircraft, are ready for service. One of the rock shelters is a huge city of over 1,000 rooms, including also a 1,100-bed hospital and several small dispensaries. Sweden has recognized the fact that the strength of national defense depends basically upon the maintenance of national health by a well-planned, actively organized and smoothly functioning medical service.

Greenland brought us another type of underground shelter. Since the conclusion of the Danish-U.S. Defense Agreement, our Army engineers of the East Ocean Division, using the submarine pressure-hull principle, have been constructing military installations which are to sink into the polar icecap of Greenland at the rate of several feet a year. These installations are housing airmen of the USAF NorthEastern Air Command. The buildings are equipped with small dispensaries. Greenland's public health is thus a concern of both the U.S. Congress and the Danish Rigsdag. In Denmark, since 1948, a commission has been studying the health conditions of that Arctic land, and the Dan-

ish Parliament enacted appropriate laws in 1951. A couple of years ago (1953), Greenland had 23,469 native inhabitants, mostly hybrids of Eskimos and Europeans, and 1,267 Danish settlers. The inhabitants are now mostly fishermen, and not hunters, as in the former days. For administration of the health laws, the country is divided into 13 medical districts, each having its own hospital. There were 411 hospital beds in 1952, which in that year accommodated 3,441 patients, three sanatoria with 70 beds for children, and a tuberculosis sanatorium with 211 beds which opened about a year ago. More than 100 depots (stores) are ready to distribute drugs and surgical dressings.

Scandinavian influence can be also detected in the culture of Finland. In that country, there are 2,300 physicians, one fifth of whom are women. More than one third of the doctors are specialists, living mainly in Helsinski. All hospitals belong to the State, and the daily cost of hospitalization does not exceed 1½ hours' earnings of the average workman. The workers are insured against accidents only, but not against sickness nor against unemployment. The Finnish physicians are well-trained, and their clinical observations are valuable assets to modern medicine. Some of their recent reports prove that, contrary to the general belief, sulfur compounds are able to provoke allergic reactions. One wonders how many persons may suffer from such allergy in our great industrial centers where they are constantly exposed to sulfur-polluted atmosphere. Finnish urologists recently recommended partial nephrectomy in strictly renal tuberculosis, provided that the operation is supplemented by streptomycin therapy. Members of the Turku Surgical Clinic condemned the routine postoperative use of penicillin since it was apt to lead to thromboembolic complications unless the antibiotic injection was combined with remedies against thrombosis.

As the aftermath of growing industralization of the country, of expanding communication and transportation of the people, and of spreading mechanization of the homes, the rate of accidents has greatly increased everywhere, including Finland. In several European countries, special clinics have been, therefore, erected for traumatic surgical work. In Finland, industrial and road accidents are responsible for 25-30% of the current annual number of deaths. To men between 15 and 40, the death risk is almost as much from accidents as from tuberculosis.

The Finnish Armed Forces are still counting their wounds which they had received in the 1939-44 Fenno-Russian War. Follow-up studies of 819 Finnish veterans, who suffered ear injuries at that time, show that they are still complaining of deafness (93.3%), tinnitus (82.4%), dizziness (60.2%), earache (40.4%), and aural discharge (38.5%). A third of the owners of hearing aids, as well as those who learned lipreading, state that they had little help by the aids. Another follow-up study includes 900 veterans who suffered penetrating chest injuries during the same war. It was detected that 51 men (or 5.9%) became victims of pulmonary tuberculosis. Among 202 veterans whose chest injury was complicated with empyema 7.9% became also the victims of tuberculosis. This observation allows the general assumption that a wound of the lung predisposes to tuberculous infection.

Another Finnish Army doctor's recent study showed that primary tuberculous pleurisy is just as common among military people in Finland as in the armies of other countries. In fact, several authorities consider such pleurisy a military disease since, even in peacetime, the living conditions and the environment of soldiers heavily predispose to pleurisy. In wartime, not only the resistance to infection is generally lower, but the effects of stress and exertion, and the poor food are also to be counted with. During the Fenno-Russian War, all these factors concurred in the year 1944 to produce an all-time high of tuberculous pleurisy in soldiers. In 43.1% of a group of 2,816 such patients, tuberculosis developed after pleurisy (in more than two-thirds of them the tuberculosis was non-pulmonary). Another fairly common military disease used to be mumps. Recent Finnish reports tell that, after the introduction of preventive immunization with

formalized mumps virus, the incidence of mumps was reduced by 50% in the Finnish Defense Forces.

Parasitosis is still a major plague of mankind, especially in the countries of the Orient. In Syria, bilharziasis remains a grave problem. The parasite lives in the irrigation canals of the Syrian Jezireh. A survey of more than 6,000 people showed that the rate of infection varies from 3% to 65%. With the aid of the World Health Organization (WHO), a campaign was recently launched against the disease. In its surveys, WHO receives much help from the regional medical schools most of which are staffed by teachers exported by WHO itself. Thus, the pathologist (Stewart) of Dow Medical College at Karachi, Pakistan, had surveyed his own town for anemia and parasitic diseases, both common throughout Asia. His findings were not surprising. According to his records, the higher the social status of a woman in Karachi was, the higher was her hemoglobin level. In the parsi women, the hemoglobin value was 76%, while in members of lower castes it sank to 69-70% (average Hb value for male Asians: 92%). Most cases of anemia were, however, of the simple nutritional type.

The Karachi survey also showed that intestinal parasitic infestations are widespread in Pakistan. Yet, they do not entirely spare the better households, or the intestines of higher social and economic groups, though the bowels of the parsis seemed to be cleaner (only 37.5% harbored parasites) than those of the beggars (62.9% infested). French naval officers tell us that the people of Indochina, too, are infested with many intestinal worms. Ascaridiosis is especially frequent, and apt to cause serious trouble. Its presence always requires medical help. Its clinical appearance may be masked by digestive, hematopoietic, nervous, and pulmonary troubles. The pulmonary form of ascaridiosis resembles the clinical features of tuberculosis.

The military service of the small country of Iraq is plagued by a shortage of doctors. Iraq's medical school has been organized according to British pattern. The language of instruction is English. It would be foolish to teach medicine in Arabic, since there is very little modern medicine available in the vernacular literature. After their graduation, all Iraqi physicians must spend one year in military service, but—*auri sacra fames!*—very few remain in the service as regular military surgeons though their country is squatting in the fearful shadow of the dreaded Iron Curtain ("As-sitár al-hadídí" in the language of Iraq).

Various new arrangements are being made in Poland for the study of atomic medicine. Investigations in the field of nuclear physics will be carried out in the newly created Research Institute for Nuclear Energy, headed by Prof. Andrzej Sotan. The same institute will also serve as a therapeutical and biomedical center. The medical program of the institute is now in the planning. The Polish Academy of Sciences has also announced plans for the promotion of the "peacetime" use of nuclear energy. For this purpose, the Academy created a committee, with the special task of coordinating all national atomic work. Several members of that committee are medical people.

It is only a matter of the point of view! A lady senator (Merlini) wished to introduce a law in Italy for the abolition of official prostitution, suppression of all brothels, and liberation of all prostitutes from the "yoke of State control." The Italian physicians became alarmed. They wonder which would be more humane to do: to liberate the brothels and the prostitutes of the streets, or to liberate the ignorant and inexperienced youth by bringing more stringent laws for the control of vice and for the protection and safeguard of Italian men. The doctors believe that it is the right, nay the duty, of the State to provide active, positive guidance for the sexual life of their nation. They argue that in France, where the girls of gayety had been "liberated," the veneral diseases began to spread at an exorbitant rate. After all, mankind that, as a matter of course, had exhibited the "phallophori" in Pompei two thousand years ago, hardly had sufficient time since then to develop a cockeyed view in matters of sexual behavior! . . . *Multa paucis!*

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ASSOCIATION NOTES

Timely items of general interest are accepted for these columns. Deadline is 3rd of month preceding month of issue.

Department of Defense

Ass't. Secretary (Health & Medical)—HON. FRANK B. BERRY, M.D.
Deputy Ass't. Sec'y.—HON. EDW. H. CUSHING, M. D.

STRENGTH OF ARMED FORCES

The strength of the Armed Forces as given on September 30, 1955 was 2,929,236: Army—1,109,543; Navy—660,390; Marine Corps—201,683; Air Force—957,620.

SELECTIVE SERVICE CALL

The Department of Defense requested the Selective Service System to provide the Army with 8,000 men during January. The Navy, Marine Corps, and Air Force did not place calls for men for January.

ARMED FORCES EPIDEMIOLOGICAL BOARD MEETING

The Armed Forces Epidemiological Board held its fall meeting at the Walter Reed Army Institute of Research, Walter Reed Army Medical Center, December 2.

The meeting was attended by the directors of the 11 commissions, and medical personnel of the Army, Navy, and Air Force. "The Board" as it is called in military medical circles, is composed of nine civilian doctors. President of the Board is Dr. John H. Dingle of Western Reserve University School of Medicine.

Members of the Board are: Dr. Paul B. Beeson, Yale University School of Medicine; Dr. Thomas Francis, University of Michigan School of Public Health; Dr. Colin M. MacLeod, New York University College of Medicine, and past president of the Board; Dr. William P. Shepard, Metropolitan Life Insurance Company; Dr. Richard E. Shope, Rockefeller Institute for Medical Research; Dr. Ernest L. Stebbins, Director of the Johns Hopkins University School of Hygiene and Public Health; Dr. Norman H. Topping, University of Pennsylvania; and Dr. W. Barry Wood, the Johns Hopkins Hospital.

Commission directors are: Ross A. McFarland, Ph.D., Harvard School of Public Health, commission on accidental trauma; Dr. Otto E. Feller, University of Virginia School of Medicine, commission on acute respiratory diseases; Dr. Donald M. Pillsbury, University of Pennsylvania, commission on cutaneous diseases; Dr. F. Sargent Cheever, University of Pittsburgh Graduate School of Public Health, commission on enteric infections; Dr. Charles E. Smith, Dean of the University of California School of Public Health, commission on environmental hygiene; Dr. Fred M. Davenport, University of Michigan School of Public Health, commission on influenza; Dr. Geoffrey Edsall, Walter Reed Army Institute of Research, commission on immunization; Dr. Thomas H. Weller, Harvard School of Public Health, commission on parasitic diseases; Dr. John C. Snyder, Dean of Harvard University School of Public Health, commission on rickettsial diseases; Dr. Charles H. Rammelkamp, Cleveland City Hospital, commission on streptococcal diseases; and Dr. John R. Paul, Yale University School of Medicine, commission on viral infections.

Army

Surgeon General—MAJ. GEN. SILAS B. HAYS

Deputy Surg. Gen.—MAJ. GEN. JAMES P. COONEY

GENERAL MARTIN RETIRES

Maj. General Joseph I. Martin, MC, was retired from the Army on November 30th after 37 years service.

General Martin was recently Surgeon of the U. S. Army Forces, Europe, and was stationed at the Headquarters in Heidelberg, Germany. He was also President of the Association of Military Surgeons of the United States for the past year, and was actively engaged in the 62nd Annual Convention of the Association which was held at the Hotel Statler, Washington, D.C., November 7-9, 1955.

General Martin began his Army career immediately after receiving his medical degree from the Chicago Hospital College of Medicine in 1918. He had served in many countries during his military career. During World War II his principal duty assignment was Chief Surgeon of the Fifth Army in Africa and Italy; later he served as Chief Surgeon of the Western Pacific Theater, and of the Army Forces in the Pacific. He holds the Distinguished Service Medal, the Legion of Merit, and many other decorations for his distinguished service with foreign countries.

General Martin is well known for his work with the medical field training programs. He was Commandant of the Medical Field Service School, Brooke Army Medical Center from 1946 to 1953 (now known as the Army Medical Service School).

He will spend a few months with his son, Lt. Colonel George W. Martin, U. S. Army Hospital, Fort Sill, Oklahoma before deciding upon a permanent place of residency.

ADDITIONAL ASSIGNMENT

Col. James H. Mackin, MSC, has been given additional duties in the Office of the Surgeon General. Previously appointed as Chief of the Medical Service Corps and Warrant Office Assignment Section he now has as his additional duty that of Chief of the Pharmacy, Supply, and Administrative Section of that Corps.

CHIEF, OUTPATIENT SERVICE

Col. Philip W. Mallory has been designated as the Chief of the Outpatient Service, Walter Reed Army Hospital. He was moved to this new position from the Office of the Surgeon General where he was with the Medical Information and Intelligence Division.

Colonel Mallory served as Surgeon for the Army Section of the U. S. Military Commission to Brazil from 1952 to 1954. He is a native of Texas, attended the University of Texas, and received his doctor of medicine degree from Tulane University Medical School in 1934.

HEADS VIRUS SECTION

Lieut. Harry M. Meyer, Jr., MC, has been appointed Chief of the Department of Virus and Rickettsial Diseases' Diagnostic Section at Walter Reed Army Institute of Research (formerly the Army Medical Service Graduate School).

RESEARCH ON BURNS

The third conference on "Research on Burns" was recently held at the Brooke Army Medical Center when 41 of the nation's leading research men gathered to discuss this problem.

Problems discussed were those on the local care, infections, fluid and electrolyte balance and metabolic and endocrine changes. The care of mass burn casualties was discussed in a round-table meeting.

GRADUATION AMSS

During the recent graduation exercises at the Army Medical Service School, Brooke Army Medical Center, Brig. General L. Holmes Ginn, Jr., Fourth Army Surgeon, spoke on problems of military medicine.

During the ceremonies Brig. General Elbert DeCoursey, Commandant of the School,

presented the Skinner Award to First Lieut. John H. Castellot, MC, who attained the highest scholastic average.

Lieut. Castellot has been assigned to duty at Letterman Army Hospital, San Francisco, Calif.

EXECUTIVE OFFICER BAH

Colonel James T. Richards, MSC, has been assigned as Executive Officer for Brig. Gen. Stuart G. Smith, commander of Brooke Army Hospital.

Colonel Richards received his master's degree in hospital administration at Northwestern University in 1950. He was Director of the Department of Administration at the Army Medical Service School, Fort Sam Houston, for five years. His most recent assignment, however, was in Korea where he spent three years.

MALE NURSES ATTEND SCHOOL

Two male nurses have attended the Army Medical Service School at the Brooke Army Medical Center. They are: Lieuts. Edward L. T. Lyon and Weldon J. Bishop.

The authorization for the commissioning of male nurses is covered by a Public Law signed by President Eisenhower last August.

RESERVE FORCES ACT TRAINEES

The Medical Training Center, Brooke Army Medical Center, has received its first group of soldiers who are serving under the Reserve Forces Act of 1955.

The soldiers have received the eight weeks of basic combat instruction at Army centers near their homes. Now they will complete the six months training which will be along medical lines and then they will return to their home reserve units.

Maj. General William E. Shambora, medical center commander, anticipates a large influx of these trainees since all those assigned to the Army Medical Service will be sent to the Brooke Army Medical Center for their initial medical instruction.

EXECUTIVE OFFICER, LETTERMAN HOSPITAL

Lt. Colonel Louis E. Mudgett, MSC, has been assigned as the Executive Officer to Maj. Gen. Paul I. Robinson, Commanding Letterman Army Hospital, San Francisco, Calif. Colonel Mudgett came from William Beaumont Army Hospital, El Paso, Texas, to replace Colonel Ernest T. Sheen, who recently retired.

Colonel Mudgett is a member of the American Hospital Association, the Association of Military Surgeons of the United States, and a nominee of the American College of Hospital Administrators.

DENTISTS GRADUATE

There were 18 dental officers from the Army, Army Reserves, Air Force and two foreign countries represented at the graduation of the Dentistry Advanced Class recently held at Walter Reed Army Institute of Research. Brig. Gen. Arthur L. Irons, Director of Dental Activities at the Center presented diplomas to: Lt. Cols. George Blanchard and Alfred E. Brandt; Majors Benjamin K. Ammenwerth, Albert J. Cardamon, James E. Cassidy, John A. Chapman, James K. Foster, Jr., Charles G. Kendall, Lyndon S. Krause, James E. Lancaster, William Z. Masters, Walter M. Ormes, Jr., Leonard K. Schreiber, Charles R. Schroeder, Kenneth W. Thomasson, and Richard D. Wakeham; and Captains Mahmud Husain, Pakistan, and Yu Ling Tan, Nationalist China.

VETERINARY LABORATORY COURSE

Brig. General Elmer W. Young, Chief of the Army Veterinary Corps, announced that beginning January 9 there would be a four-week pilot course given at the Walter Reed Army Institute of Research for the training of military veterinary laboratory officers in methods of detecting radioactivity in food and food radio assay procedures.

OPERATING ROOM NURSING TECHNIQUES

The second postgraduate workshop to study operating room nursing techniques is being held at the Walter Reed Army Medical Center this month. The purpose is to acquaint nurses with the latest trends in

surgery and to standardize operating room nursing techniques.

NURSE LEADERS CONFER

The Council of Federal Nursing Services recently held a meeting in the office of the Surgeon General of the Army. Civilian nurse leaders from various sections of the country representing the American Nurses Association and the National League for Nursing were in attendance, as well as nurses from the Federal agencies. The main topic under consideration was a progress report of the study being made of the experimental two-year training curriculum for the professional nurse. Utilization of non-professional hospital personnel was another subject having an important spot on the agenda.

COLONEL BERNIER HONORED

Formerly mentioned in these columns and now accomplished was the awarding of the 1955 Callahan Award presented by the Ohio State Dental Association to Col. Joseph L. Bernier, DC, Chief of the Dental and Oral Pathology Section, Armed Forces Institute of Pathology.

Colonel Bernier is an authority on oral pathology. He is a native of Illinois and holds the degree of doctor of dental surgery and an MS degree in dental pathology. He is also professor of oral pathology at Georgetown University School of Dentistry.

KOREAN AWARD GIVEN

Maj. William A. Bridenstine, VC, has been presented the Award of Industry by President Syngman Rhee of South Korea for outstanding achievements towards the rehabilitation of the war-decimated livestock industry of that country.

The program which was instituted by Major Bridenstine and which was widely lauded by Korean officials consisted of: (1) a plan to have a feed plant with a hammer mill set up in the counties of Korea, thus making the maximum use of the roughage and forage available to the farmers for their livestock; (2) introduction of the dried type of vaccines used in fighting diseases of domestic animals which resulted in the expansion of Korean production of desiccated vaccines as well as improvement in livestock health.

SENIOR MEDICAL STUDENTS

Seniors in approved medical schools planning to enter the Medical Corps, Army Reserve after graduation next June can begin earning Reserve credits at once if they accept their commissions early this winter, according to Col. Joseph H. McNinch, Chief of the Personnel Division, Surgeon General's Office.

These application forms concern participation in the Armed Forces Reserve Medical Officer Commissioning and Residency Consideration Program now in operation. Under this program, evolved by the Department of Defense and the Selective Service System to insure the continuing supply of properly trained doctors for the nation, the medical senior may combine his military obligation and his intern and residency training. He may have up to 3 years in residency instruction in the medical specialties needed to safeguard the health of the fighting men.

CLINICAL TECHNICIANS

The Army needs clinical technicians for its Medical Service. Particularly needed are women clinical technicians. Lt. Col. Walter L. Beeson, MSC, Chief of the Enlisted Branch, Personnel Division, Surgeon General's Office, has announced that an effort will be made within the service to interest WACs to enter one of the clinical technician schools conducted by the Army at several of its teaching hospitals.

SENIOR STUDENT PROGRAM

A new program which provides for the commissioning of senior medical students as second lieutenants has been instituted. They draw regular Army pay during their senior year in school and upon graduation they are promoted to first lieutenant; then if fully qualified they enter the Army's Internship program with duty at one of the named Army hospitals (formerly designated as general hospitals).

The first East Coast student to be taken

in under this program was John Vittrup, University of Pennsylvania Medical School. The gold bars of second lieutenant were pinned on his shoulders by Brig. General Mack L. Green, Commanding Officer of Valley Forge Army Hospital, at Phoenixville, Pa. John is the son of Maj. Gen. R. L. Vittrup, Deputy Assistant Chief of Staff, G-3 section of the Department of the Army in Washington.

WARRANT OFFICER INSIGNIA

The newly authorized insignia for Army warrant officers consists of the following:

Chief Warrant Officer, Grade 4: silver bar with three brown enamel bands.
Chief Warrant Officer, Grade 3: silver bar with two brown enamel bands.
Chief Warrant Officer, Grade 2: gold bar with three brown enamel bands.
Warrant Officer, Grade 1: gold bar with two brown enamel bands.

ARMY UNIFORM

The new green uniform which will be compulsory for the Army officer after October 1, 1957 is to have a ¾" black braid stripe on the sleeve cuffs and a 1½" black braid stripe for the outside seam of the trousers. General officers will wear a 1½" stripe on the sleeve cuff and two ½" stripes, placed ½" apart, on the outside seam of the trousers.

Incidentally the green blouse and pink slacks which are now compulsory for officers can be purchased for approximately $23; this is a marked reduction in the close-out of this uniform.

Navy

Surgeon General—Rear Adm. Bartholomew W. Hogan
Deputy Surgeon General—Rear Admiral Bruce E. Bradley

PROMOTED TO ADMIRAL

Four Naval Reserve Captains of the Medical Corps have been selected for promotion to the grade of Rear Admiral, U. S. Naval Reserve:

Captain Waltman Walters, Mayo Clinic, Rochester, Minn.;
Captain Morton J. Tendler, Memphis, Tenn.;
Capt. William G. Hamm, Atlanta, Georgia;
Captain Benjamin Tenney, Jr., Boston University School of Medicine, Boston, Mass.

ELECTED TO BOARD OF GOVERNORS

Rear Admiral Thomas F. Cooper, MC, Inspector General Medical Department Activities, Department of Navy, has been elected to the Board of Governors of the American College of Surgeons. He will be the representative for the Navy Medical Corps.

APPOINTED CHAIRMAN

Capt. C. P. Phoebus, MC, has been elected chairman of the Armed Forces—National Research Council Committee on Hearing and Bio-Acoustics. He succeeds Dr. R. H. Bolt, Massachusetts Institute of Technology.

The areas under consideration by the committee are: effects and control of noise, auditory discrimination, speech, communication, the fundamental mechanism of hearing, and auditory standards.

PHYSICAL MEDICINE APPOINTMENT

LCDR Anton A. Tratar, MC, has been appointed as chairman of the committee on Cooperation with the Government services, this committee being one of the American Congress of Physical Medicine and Rehabilitation.

He is Chief of the Physiotherapy Service, Naval Hospital, Oakland, California.

AWARD GIVEN

The "Award of Merit," the official title for the American Dental Association Scientific Award, was presented to the U. S. Naval Dental Corps for the training aid exhibit "Mr. Disaster," exhibited at the recent national convention of that Association in San Francisco.

"Mr. Disaster" was designed by Captain John V. Niiranen, DC, U. S. Navy. It is a

life-size manikin fabricated from plastic and is designed to demonstrate many of the first aid problems encountered in disasters involving human beings.

COMMENDATION

During the meeting of the Honorary Consultants to the Surgeon General, held at the National Naval Medical Center, Bethesda, Maryland, Dr. Leslie M. Fitzgerald, Secretary-Treasurer of the American Board of Oral Surgery, made the following statement to the general conference regarding the training program of the Navy in oral surgery:

"Mr. Chairman, I appreciate this opportunity to discuss the graduate program of the Naval Dental Corps. I couldn't help but feel that I wanted to pay tribute to the graduate training program; the type of men that have come before our board are of such high caliber and have made such a high showing before the American Board of Oral Surgery that I think that publicly they should be recognized for their fine work."

CLINICAL CLERKSHIPS

During the summer months, commencing July 1 of each year, clinical clerkships are available to second and third year medical students commissioned as Ensigns 1995. One tour of such duty, up to sixty days of active duty at a teaching naval hospital, may be granted. This duty carries with it full pay and allowances for the rank.

Third year medical students who expect to qualify for acceptance into their final year of medical school and who wish to avail themselves of the Navy's new Senior Medical Student Program should make application no later than February 1, 1956. Recruiting stations and Offices of Naval Officer Procurement can give more information.

Air Force

Surgeon General—MAJ. GEN. DAN C. OGLE
Deputy Surg. Gen.—MAJ. GEN. W. H. POWELL, JR.

OFFICER IN ADA

Brig. Gen. Marvin E. Kennebeck, Assistant for Dental Services, Office of the Surgeon General, Air Force, was elected Third Vice-President of the American Dental Association at its recent meeting.

RESERVE AFFAIRS ASSISTANT

Colonel Paul Goodwin, USAF (MC), has been named as Assistant for Reserve Affairs in the Office of the Surgeon General of the Air Force.

Dr. Goodwin comes to this position from that of Wing Surgeon of the Alabama Air National Guard's 117th Tactical Reconnaisance Wing. During World War II he served in the South Pacific, and in 1946 was separated from the service with the rank of lieutenant colonel.

LEGION OF MERIT AWARDED

Colonel Ralph E. Switzer, USAF (MC), was recently presented with the Legion of Merit by Maj. General Dan C. Ogle, Surgeon General of the Air Force.

The citation reads in part, "Conscious of the wide range of problems inherent in providing medical care for United States forces personnel at a base where medical problems were complicated by distance and limitations of facilities, he was able to foresee and plan for a medical program adequate for the needs of a military installation. . . . Colonel Switzer's foresight and skill have been clearly demonstrated by the methods he employed to establish sincere and friendly relationships with medical authorities in many nations in Southeast Asia, and have reflected the greatest credit upon himself and the United States Air Force."

COMMENDATION RIBBON AWARDED

Major John A. Johnson, USAF (MC), was presented with the Commendation Ribbon by Major Gen. Dan C. Ogle, Surgeon General, U. S. Air Force, in a recent ceremony in the Office of the Surgeon General.

The citation accompanying the award read, "Major John A. Johnson distinguished himself by meritorious service as Chief of the Projects and Procedures Section and Chief of the Material Management and Procedures

Branch, Office of the Surgeon General, Headquarters, United States Air Force, from 27 January 1952 to 5 June 1955. In these important assignments, the initiative, foresight, experience and ability of Major Johnson were instrumental factors in effecting significant contributions to the development of policies and systems covering the areas of stock control and supply operations. By his ability and exemplary devotion to duty, Major Johnson has reflected great credit upon himself and the United States Air Force."

Public Health Service

Surgeon General—LEONARD A. SCHEELE, M.D.

Deputy Surg. Gen.—W. PALMER DEERING, M.D.

DENTAL OFFICER EXAMINATION

A competitive examination for appointment of Dental Officers to the Regular Corps of the United States Public Health Service will be held in various places throughout the country on March 20, 21, 22, and 23, 1956.

Entrance pay for an Assistant Dental Surgeon with dependents is $6,017 per year; for Senior Assistant Dental Surgeon with dependents, $6,918. Provisions are made for promotions at regular intervals.

Active duty as a Public Health Service officer fulfills the obligations of Selective Service.

Entrance examinations will include an oral interview, a physical examination, written objective examinations in the professional field, and a practical examination in the various phases of dentistry.

Application forms must be in no later than February 10, 1956.

Application forms may be obtained from the Chief, Division of Personnel, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D.C.

INACTIVE RESERVE COMPONENT

Eighty-six physicians, nurses, sanitary engineers, dentists, and pharmacists were recently appointed to the inactive reserve component of the commissioned officer corps of the Public Health Service.

The Program is designed to expand the Commissioned Reserve of the Service by organizing and training health and medical personnel throughout the country for emergency duty in times of national crisis. These officers are held in reserve for emergency service and trained to serve in critical situations affecting the health and well-being of large numbers of people. They will be called out principally to reinforce the staffs of official State and local health agencies and to augment the Public Health Service operating staff.

WATER PROBLEM

With the rapidly increasing urban population in this country there is an increasing demand for water. The supply must be adequate and pure. These requisites require engineering skill. An eight-year inventory recently compiled by the Public Health Service's Robert A. Taft Sanitary Engineering Center at Cincinnati has revealed that the number of communities in the 25,000-and-above category has increased from 422 to 570.

When the suburbs are included, the number of people served by municipal water systems has increased from 61.8 million to 82.6 million.

Veterans Administration

Chief Medical Director—WILLIAM S. MIDDELTON, M.D.

Deputy Chief Med. Dir.—R. A. WOLFORD, M.D.

ASSIGNMENTS

Dr. Endre K. Brunner has been appointed manager of the Veterans Administration hospital in the Bronx, N.Y. He comes to his new position from Manchester, N.H.

Dr. John G. Hood, formerly manager of the Bronx VA hospital has been named as Area Medical Director for the Administration at its new area office, Columbus, Ohio.

TUBERCULOSIS PATIENTS

One of the problems in the administration of hospitals for tuberculosis patients is that of the irregular discharge of patients—those who leave before treatment is completed.

To combat this problem which is costly to the government and means incomplete treatment for the patient the VA has developed what is known as the Madison Sentence Completion Form, developed by George Calden, Ph.D., clinical psychologist at the VA hospital in Madison, Wis.

Patients are given this 80 incomplete sentence form to fill out at the end of their eighth week of hospitalization. The form is designed to bring out the patient's attitude regarding hospitalization. When the attitude is not favorable the patient is contacted in an effort to correct any discontent or misunderstanding. Through this study the irregular discharges have fallen approximately 17 percent.

VETERAN TRAINING

Trainees enrolled under the Korean GI Bill numbered in the neighborhood of 700,000. There has been a marked increase in the number over the past year. The largest stride has been in the number of those enrolled for the college level—a 50 percent increase.

The number of those training under the World War II GI Bill has declined considerably, there being only 78,000 enrolled on November 1, 1955.

VETERAN PATIENTS

The daily in-hospital patient load for the Veterans Administration is 110,000 with most of these in VA hospitals. Of that number 34,000 have been hospitalized for more than five years, and of the 34,000 there are 9,000 that have been hospitalized for 20 years or more.

With a veteran population of over 22,000,000 hospitalization becomes an increasing problem. It is estimated that 584,000 of that number are over 65 years of age, but in only five years there will be over 1,780,000 over 65 years of age.

The advisability of grouping the long term patients has been under study for some time and a move in that direction has recently been instituted in a number of the VA hospitals. By so doing special measures required for the long term patients can be more easily carried out. These special measures not only involve medical care but also recreational and occupational matters.

Miscellaneous

INTERNATIONAL CONGRESS ON CHEST DISEASES

The Fourth International Congress on Diseases of the Chest will be held at Cologne, Germany, August 19-23, 1956. Those wishing to present some original work should send an abstract of the paper by air mail to Professor Andrew L. Banyai, Chairman, Council on International Affairs, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Ill. The executive offices of the College are located at the same address.

FELLOWSHIPS AVAILABLE

Fellowships in tuberculosis and related pulmonary diseases are being made available by the American Trudeau Society, the Medical Section, National Tuberculosis Association.

Resident Fellowships are available for physicians under thirty years of age who are citizens of the United States.

Trudeau Fellowships are available for a higher level of training and are offered to specially qualified candidates who have been assured of a continued teaching appointment upon completion of training.

Further information can be obtained from the Director of Medical Education, American Trudeau Society, c/o The Henry Phipps Institute, Seventh and Lombard Sts., Philadelphia 47, Pa.

ESSAY CONTEST

The Mississippi Valley Medical Society Annual Essay Contest is open to physician medical writers who may wish to submit papers. Any subject of general medical or

surgical interest including medical economics and education may be chosen. The winning essay will receive a cash prize of $100, a gold medal, and a certificate at the meeting to be held in Chicago, September 26-28, 1956.

Further details may be secured from the Secretary, Harold Swanberg, M.D., 209-224 W.C.U. Building, Quincy, Ill.

POLIO GRANTS

The National Foundation for Infantile Paralysis has made grants and appropriations in the amount of $1,372,513 for professional education in selected fields. This amount brings the total granted for professional education since 1938 to $21,562,456.

HEALTH CARE STUDY

The Health Information Foundation has granted to the New York University Graduate School of Arts and Sciences $17,000 for the study of family health care and spending patterns. A report is to be presented in September 1956.

The Foundation was organized in 1948 by drug, pharmaceutical, chemical, and allied industries to conduct research in the social and economic aspects of health.

CONGRESS OF OTOLARYNGOLOGY

The Sixth International Congress of Otolaryngology will be held in Washington, D.C., May 5-10, 1957. Those wishing to submit contributions to the program should communicate with the General Secretary, Paul Holinger, M.D., 700 N. Michigan Ave., Chicago 11, Ill.

Honor Roll

The following sponsored one or more applicants for membership in the Association during the month of November, 1955:

Capt. Harold M. Allen, MSC, USA
Lt. Col. Edmund G. Beacham, MC, Md. NG
Lt. Col. Stephen J. Beaudry, MSC, USA
Col. Robert E. Bitner, USA, Ret.
Col. Raymond H. Bunshaw, MC, USA
Capt. R. F. Carmody, MC, USN
Col. G. R. Carpenter, MC, USA
Med. Dir. Walter C. Clowers, USPHS
Capt. Mary Connelly, AMSC
Med. Dir. John W. Cronin, USPHS
Capt. Thomas B. Dunne, MC, USA
Brig. Gen. L. Holmes Ginn, MC, USA
Major Gen. Alvin L. Gorby, MC, USA
Col. W. D. Graham, MC, USA
Col. George B. Green, USAF (MC)
Med. Dir. Victor H. Haas, USPHS
James A. Hagans, M.D.
Surg. W. Burton Haley, USPHS
Capt. Keith E. Hanssen, MSC, USA
Col. R. E. Hewitt, MC, USA
Capt. Wm. E. Kellum, MC, USN
Col. Bernard J. Kotte, MSC, USA
Med. Dir. James P. Leake, USPHS, Ret.
Capt. Grace J. Mach, ANC
Major Gen. Joseph I. Martin, MC, USA
H. L. Moore, D.D.S.
F. Keshvar Mostofi, M.D.
Dr. James C. Munch
Col. Arthur J. Redland, MC, USA
Med. Dir. Frank Reider, USPHS
Col. C. F. St. John, MC, USA
Col. Louis F. Saylor, MC, USA
Lt. Col. Agnes P. Snyder, AMSC
Lt. Col. Lloyd R. Stropes, MC, USA
James G. Terrill, Jr., USPHS
Dr. N. H. Wallace
Capt. Harry S. Weaver, Jr., MC, USNR
Brig. Gen. John R. Wood, MC, USA
Capt. Elwood L. Woolsey, MC, USN
Col. Charles T. Young, MC, USA
Col. Abner Zehm, MC, USA

LETTER TO THE EDITOR

To the Editor:

The article "Prevention of Stroke or Heat Exhaustion in the Armed Services" by Surg. Cdr. F. P. Ellis, MILITARY MEDICINE 116: 323 (May 1955) was excellent and mentions prickly heat. This is often very important and can easily be helped.

In the hot, humid South Pacific Islands during the early part of World War II common prickly heat rash not only caused universal distress but often temporary disability because the intense itching, paraesthesias, and burning interfered with concentration, work, combatability, and sleep, and often because infection of excoriations occurred.

I tried all available medications, etc., with no effect until I gave large doses of vitamin C in tablet form, 300-500 mgm. daily. Most patients obtained dramatic relief, some within one-half hour, with effects lasting up to 24 hours. This was reported to the Surgeon General of the Army and in the J.A.M.A. 145:175, Jan. 20, 1951.

Further clinical tests were done by confreres in the hot, dry California desert in the summer of 1950. Doctors Pawley and Berry reported similar success with Vitamin C in babies and adults in whom prickly heat was causing morbidity.

ROBERT L. STERN, M.D.
8820 Wilshire Blvd.
Beverly Hills, California

ARMED SERVICES MEDICAL PROCUREMENT AGENCY OPERATING CHIEFS

Left to right: Lt. Col. Arthur Sullivan, Army, Chief of Development, Engineering and Standards Division; Lt. Col. William Eledge, Air Force, Chief of Industrial Mobilization Division; Commander Conard C. Fowkes, Navy, Agency Small Business Specialist; Colonel Jenner Jones, Army, Deputy Chief of Agency; Captain Alfred W. Eyer, Navy, Chief of Agency; Col. John V. Painter, Air Force, Comptroller; Col. Robert Bynum, Jr., Army, Chief of Purchases Division; Commander R. R. Sullivan, Navy, Assistant Chief of Industrial Mobilization Division; and Lt. Col. Merlyn Runyon, Air Force, Chief of Buying Branch "A," Purchases Division.

ANESTHESIOLOGISTS URGENTLY NEEDED

The Bureau of Medicine and Surgery, Department of the Navy, is in urgent need of certified or Board eligible anesthesiologists for service in various naval hospitals in continental United States. The Bureau desires to correspond with or interview such civilian specialists who may be among the Reserve components of the Navy Medical Corps (inactive) or those who may have no past or present military affiliations, but may reasonably expect induction into the Armed Forces within the next twelve months under existing law, and others who might desire to consider applying for commission in the Naval Reserve for the purpose of performing extended active duty or for commission in the Regular Navy for career purposes in anesthesiology. Communication should be directed to the Chief, Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D.C.

SEVENTH CLASS—VETERINARY RADIOLOGICAL HEALTH COURSE

OAK RIDGE INSTITUTE OF NUCLEAR STUDIES, INC., OAK RIDGE, TENN.

Oak Ridge Inst.

Front row, left to right: Lt. Col. Leslie C. Murphy; Lt. Col. Charles B. Frank; Col. Joseph D. Manges; Dr. Ralph T. Overman, Director of Training, Institute; Lt. Col. Roy A. Resseguie; Lt. Col. Earl G. Kingdon; Lt. Col. George R. Zacherle.

Second row, left to right: Dr. Robert K. Somers, Dept. of Agriculture; Maj. Morris D. Schneider; Capt. Charles V. Lang; Lt. Col. Dorwin H. Perella; Lt. Col. Herbert R. Faust; Maj. Roy W. Upham; Maj. Joshua E. Henderson.

Third row, left to right: Maj. Max M. Nold, Instructor; Dr. John H. Simpson, Ohio State Univ.; Maj. A. H. Munson; Capt. James H. McNamara; Capt. Jack D. Douglas; Capt. James R. Halstead.

BOOK REVIEWS

HIROSHIMA DIARY. By Michihiko Hachiya, M.D., translated by Warner Wells, M.D. 238 pages. The University of North Carolina Press, Chapel Hill, North Carolina. 1955. Price $3.50.

Physician Michihiko Hachiya has for many years been the Director of the Hiroshima Communications Hospital. After a ten year delay the day to day account of his experience during and for the first fifty-five days after atomic bombing is available in English, through the efforts of Dr. Warner Wells. It is painstakingly translated to retain the full flavor of the original Japanese. Dr. Wells and his associates have done well with a difficult task. Dr. Hachiya was gravely wounded and appreciably irradiated by the detonation. He suffered about one hundred and fifty wounds from indriven glass and other debris, and, despite infection had a relative agranulocytosis. His story begins with an account of his personal experience. It unfolds, through accounts of other eyewitnesses from in and about the city, details of the catastrophe and of human behavior under those circumstances. From this viewpoint, it is important reading for non-medical people as well as physicians.

Interwoven into this account are descriptions of patients, their histories, complaints, physical and laboratory findings, progress notes, and, in some cases, gross post-mortem findings. The mental processes of the physician, as he unravels the interwoven fabric of blast, burn, and radiation sickness in the absence of communication, outside consultation, or reference documents are fascinating. Here a doctor of standing, suddenly deprived of home, worldly goods, and the physical adjuncts to the practice of his profession, leads from his sick bed a professional and administrative staff in caring for mass casualties and studying the clinical patterns produced by a weapon previously unknown to man. That so much was learned under most trying and primitive circumstances is a monument to this physician and his followers.

There are other lessons in this compelling story. The overcoming of obstacles to journey and visit this doctor by his lay and professional friends demonstrates the prominent place of the compassionate physician in the affection of his fellows. The detailed technical guidance Dr. Hachiya afforded his staff during the study should remind administrators that they must ever be technical men of wisdom and understanding. The risking of life and limb by associates to keep alive the broken body of Dr. Hachiya and to rely upon his intellect and experience are witness to the leadership which can be exerted by the physician administrator. The aggressive initiative of subordinates in stepping into the breach in times of stress points up the importance of continuing training and preparation for leadership for the young men who must follow and keep medicine dynamically alive.

Side excursions into the personal problems of patients, and their counseling by their doctor, warm the heart. The compassion for fellow sufferers, seen through the eyes of Dr. Hachiya and his friends, should dispel the oft alleged callousness of the Oriental for his fellow man. Philosophic discourses upon government, the military, war, and rehabilitation are interspersed throughout the story. Accounts of the reverence with which the Japanese regard their Emperor cannot but impress one with the wisdom of the Allies in keeping him in office to guide these fanatically devoted people in their bitter hour of defeat.

The translation is superb. Copious footnotes explain Japanese words in the text and relate interesting bits of history and geography of importance. A cast of characters and a glossary further continuity. Dr. Wells was assisted by Dr. Neal Tsukifuji, a *nisei* of Los Angeles who has been trained in the United States and Japan. The result is beautiful passage after beautiful passage, with a minimum amount of violence to the words of Dr. Hachiya. Three years of painstaking effort, with the assistance of a host of scholars, has resulted in a compelling account which many will read at one sitting. So much is said in such little space that one is led to wonder. And yet, between the lines is an absorbing saga of medicine and man.

This is a most unusual book. The layman can read it with profit, picture in his mind the terror and confusion of atomic warfare, and gain some insight into the dependence which can be placed upon the medical profes-

sion. The physician can read vivid accounts of the physical and biological effects of atomic weapons, the individual and mass psychology resultant thereto, and adjust his thinking through first hand accounts of survivors. This book is highly recommended for all thinking people concerned with our very existence.

COL. JOHN R. HALL, JR., MC, USA

FUNDAMENTAL CONSIDERATIONS IN ANESTHESIA, 2nd Ed. By Charles L. Burstein, M.D., Associate Clinical Professor of Anesthesiology, New York University Post-Graduate Medical School. 219 pages. The Macmillan Company, New York. 1955. Price $5.50.

The title of this book may be moderately misleading in that it does not primarily deal with the teaching of basic principles of technic in administration of anesthetics. Instead, it is a review of many of the effects and side-effects produced by various agents and technics in common use in anesthesia as it is practiced today, and based on substantuated clinical and laboratory experiences of the author.

In the book, Dr. Burstein has presented a review of the respiratory, circulatory, and autonomic nervous systems in a series of short, concise discussions of the normal functional physiology of each, followed by a description of the changes produced by the application of anesthetic agents, supplementary agents which do not of themselves have anesthetic properties and variations in technic.

The concluding chapters are additions to the first edition and are devoted to discussions of the commonly used muscle relaxants and hypotensive agents. The pharmacology, indications, contraindications, and some of the pitfalls of the use of each are presented. An adequate bibliography is available at the end of the chapter.

This book is recommended by the reviewer for use as a textbook in the teaching of Anesthesiology as well as a reference book for those whose professional interest is in another specialty in which anesthesia plays a supportive role.

LT. COL. HOWARD K. PEDIGO, MC, USA

TEACHING PHYSIOLOGY AND ANATOMY IN NURSING. By Hessel H. Flitter, R.N., M.A., Assistant Professor, School of Nursing, University of Pennsylvania; and Harold R. Rowe, R.N., M.S., Assistant Professor, School of Nursing, University of Pennsylvania. 56 pages. (With special reference to Greisheimer's textbook—Physiology and Anatomy, 7th edition.) The J. B. Lippincott Co., Philadelphia, Montreal, 1955. Price $2.00.

In this short, concise book the authors aim to present some abbreviated suggestions that may prove useful to instructors beginning careers in science teaching. Emphasis is directed from the content-centered approach toward the more recent trends in teaching which include correlation, integration, and the patient-centered approach. A selection of methods, approaches, and techniques in flexible form are provided which serve to prepare the beginning science teacher with the skills to present the facts of physiology and anatomy to the nursing students in a much more interesting and meaningful manner.

LCDR. VERA E. THOMPSON, NC, USN

PHYSIOLOGY AND ANATOMY. 7 ed. By Esther M. Greisheimer, Ph.D., M.D., Professor of Physiology, Temple University, School of Medicine, with the assistance of Ann Miraldo, R.N., B.S., Science Instructor, Temple University, School of Nursing. 868 pages, The J. B. Lippincott Co., Philadelphia, Montreal, 1955. Price $5.00.

This completely revised textbook presents first the anatomy and then the physiology of the structures involved. It is a comprehensive volume which covers all aspects of the human body as an integrated whole as well as a thorough and complete study of all of its component parts.

It is intended for the use of nursing students and is presented in a manner which is readable and understandable. The analogies used with applications to situations in one's daily life make factual material more meaningful. It is comforting to find that the section covering the nervous system is dealt with in more detail and that it has been given its rightful place early in the text.

The author has included material from time to time in the text from other courses as it related to the subject under discussion in order to provide a more lucid learning situation. The section "Practical Considerations" incorporated at the end of each chapter further focuses attention on salient points that have been discussed.

The wealth of illustrative material, the glossary of terms, the chapter summaries in outline form, and the brief clinical situation with questions which follows each chapter are excellent features. It is a text nursing

students should find not only valuable but extremely interesting as well.

LCDR. VERA E. THOMPSON, NC, USN

CARDIAC AUSCULTATION INCLUDING AUDIO-VISUAL PRINCIPLES. By J. Scott Butterworth, M.D., Associate Professor of Medicine, New York University Post-Graduate Medical School; Maurice R. Chassin, M.D., Assistant Professor of Clinical Medicine, New York University Post-Graduate Medical School; and Robert McGrath, M.D., Associate Professor of Clinical Medicine, New York University Post-Graduate Medical School. 111 pages, 54 figures. Grune & Stratton, New York and London. 1955. Price $4.50.

The purpose of this book is to present clinical auscultation of the heart based upon practical experience and teaching for the past several years at the New York University Post-Graduate Medical School. Audio-visual techniques provide the student with simultaneous delivery of sound to the ear together with the visual pattern of sound as recorded by the stethogram. Permanent records of the heart sounds in health and disease states are obtained by means of a tape recorder. Correlation of sight and sound and their simultaneous interpretation have done much to clarify the significance of physical diagnosis in cardiac and thoracic conditions.

This book is both short and practical because it omits theoretical considerations and controversial points. The main theme is clinical in orientation and therefore of practical value to every practitioner and most medical students.

CAPT. C. C. SHAW, MC, USN

CARDIOLOGY NOTEBOOK FOR PRELIMINARY INSTRUCTION IN MEDICAL CURRICULA. By Columbia University College of Physicians and Surgeons. 95 Pages. Grune & Stratton, New York and London. 1955. Price $2.50.

The purpose of this Cardiology Notebook is to provide immediate orientation in many aspects of bedside practice to the medical student during the period of transition from the basic sciences to the much broader field of clinical evaluation, interpretation and application.

The basis of cardiac diagnosis and treatment, as indeed of all differential diagnosis and therapy, is an adequate history and physical examination. Mastery of the methods of physical diagnosis can be gained only at the bedside. Ancillary laboratory examinations serve as a supplement to rather than a substitute for careful clinical evaluation.

This Notebook presents in the simplest form some of the basic principles of the method and language of cardiology. The subject matter is divided into four sections: (1) cardiac fluoroscopy and x-ray; (2) electrocardiography; (3) hemodynamics; (4) nomenclature of cardiac diagnosis. This presentation should be of practical value to interns and senior students in general and to junior medical students in particular.

CAPT. C. C. SHAW, MC, USN

THE PHYSICIAN AND THE LAW. By Rowland H. Long, Member Massachusetts and New York Bar; Lecturer in Forensic Medicine, New York University; Post-Graduate Medical School. Foreword by Milton Helpern, M.D., Chief Medical Examiner, New York City. 284 pages. Appleton-Century-Crofts, Inc., New York. 1955. Price $5.75.

This book is easy to read, is instructive, and fulfills its purpose. In the preface the author states that the purpose of the book is twofold: to afford the practicing physician some knowledge of the rules of law which govern his conduct in the physician-patient relationship; to help the physician who has to appear in court as a witness in a case in which it is necessary to prove facts relating to injury, disease, and the causal relationship between injury and disease and death. Obviously this text is primarily for medical students and practicing physicians.

Since the laws in various jurisdictions vary, and this book is intended for physicians throughout the United States, the text states mainly general principles, and the alert physician should realize that the set of circumstances in which he is involved must be evaluated by a qualified member of the legal profession.

In its eighteen chapters the scope of the conditions covered include a wide and comprehensive range of medico-legal problems. Numerous references and citations at the end of many chapters should be of considerable value to teachers of medico-legal law as well as practising attorneys.

The selection of the subject matter, its method of presentation, as well as the clarity of the writing, are all to be commended.

At the end is a glossary of legal and insurance terms, a table of the legal cases

mentioned in the various references, and an adequate index.

COL. EDWARD A. COATES, JR., USA, RET.

THE PHYSIOLOGY OF DOMESTIC ANIMALS. 7th Ed. By H. H. Dukes, DVM, MS, Professor of Veterinary Physiology, New York State Veterinary College, Cornell University. Cornell University Press, Ithaca, N.Y. 1955. Price $9.75.

The physiology of domestic animals, with emphasis on the latest experimental research utilizing the newer tool of science, the "Radio Isotope." New chapters and sections to this already established authority on Physiology include one by E. A. Hewitt, DVM, Ph.D., on Physicochemical Basis of Physiological Phenomena, and one on Physiological Oxidation by J. B. Summer, Ph.D.; a chapter on Water, Electrolytes, and Acid-Base Balance by M. R. Kare, MSA, Ph.D.; a part on Intermediary Metabolism by J. A. Dye, Ph.D.; and a part on Endocrine Organs, Reproduction, and Growth by S. A. Asdell, Ph.D. Each part, chapter, and section is very adequately supported by complete and voluminous reference lists, making this edition not only an excellent book for the student of veterinary medicine, but a very necessary reference for the research scientist, the private practitioner and the teacher of physiology.

This edition contains 9 parts; 41 chapters on 957 pages well supported by charts, tables, and diagrams; a 28 page appendix on lecture demonstrations in physiology and a 22 page index covering the text, figures, and legends.

Every student of veterinary medicine, each veterinary practitioner, and research worker in this field, and others who are interested in physiology will find that this edition provides an interesting and authoritative presentation of up to date knowledge of unequaled scope and authority.

COL. WILLIAM B. SNODGRASS, USAF(VC)

AGEING-GENERAL ASPECTS. Ciba Foundation-Colloquia on Ageing. Vol. I. G. E. Wolstenholme, O.B.E., M.A., M.B., B.Ch. and Margaret P. Cameron, MA., A.B.L.S. 255 pages with illustrations and tables. Little, Brown and Co., Boston. 1955. Price $6.75.

This volume is the first of an anticipated series of Colloquia on the problem of ageing to be presented by the Ciba Foundation. It is a collection of papers which were reported at a conference of ageing held in London in July, 1954, just before the Third Congress of the International Association of Gerontology. In all, eighteen papers are included, written and discussed by thirty-four authorities in the field of geriatrics.

Following the chairman's introductory remarks, the participants proceed to a discussion of the definition and means of measuring the chronological and physiological age of the individual and the community.

With this as a background, there follow several articles dealing with more specific problems, including the pathological changes in the ageing individual and studies of the effect of increasing age on respiratory function, mineral metabolism, membrane permeability, and steroid chemistry. Several papers deal with the results of tissue transplant experiments in animals. The psychological aspects of senescence come in for considerable discussion in later chapters of the book. Each paper has a bibliography and eleven are followed by a general discussion of their subject matter.

The illustrations are mainly charts but a few photomicrographs are included.

The papers and discussions range from the philosophical and speculative to those dealing with precise chemical and physiological experiments. It will probably prove of considerable interest to those in the field of gerontology. Its appeal to the average reader of clinical medical material would be limited.

COL. FRANCES W. PRUITT, MC, USA

CORNELL CONFERENCES ON THERAPY. Vol. VII. Edited by Harry Gold et al. The Macmillan Co., New York. 1955. Price $4.50.

This book does not fall short of the standard of excellence established by its illustrious predecessors. Covered in this particular volume are the following subjects: How to evaluate a new drug, Selection of digitalis preparations and their proper administration, Choice of a diuretic agent, Most effective application of therapeutic agents in the management of congestive failure, Treatment of pericardial effusion, Re-evaluation of quinidine therapy, Choice of narcotics and anesthetics in the patient with shock, Choice of therapy in intestinal parasitic disease, Utility of medications in the treatment of headache, The doctor's bag revisited, Management of poisoning by pesticides, Choice of therapy in intermittent claudication, Use

and abuse of physical therapy, Management of hematemesis associated with protal hypertension, Surgical treatment of mitral valvular disease.

Each of the subjects is covered rather in detail and then by careful use of question and answer technic additional data is developed and contrary points of view elaborated and discussed. This series continues to grow in value with repetition of subjects previously presented, bringing them up to date. The management of the various ramifications of congestive heart failure are particularly valuable material in the volume presently under review. The data is presented in such a manner that the clinician is given authoritative, succinct and useful information in a clear and readable form without frills or significant omissions.

Other particularly useful sections are those on Headache medications, Parasitic infections and Pesticide poisoning, containing as they do clear expositions of current thinking in these fields. The evaluation of surgical treatment of mitral disease is very timely and well-presented.

This book is recommended for the general practitioner and internist. Surgeons could profit by the section on mitral surgery and that on choice of narcotics and anesthetics in the patient with shock.

COL. RYLE A. RADKE, USA, RET.

BLOOD SUPPLY AND ANATOMY OF THE UPPER ABDOMINAL ORGANS. With a Descriptive Atlas. By Nicholas A. Michels, M.A., D.Sc. (Louvain), Professor of Anatomy at the Daniel Baugh Institute of Anatomy, Jefferson Medical College, Philadelphia. 579 pages, 172 illustrations, 166 in color. J. B. Lippincott Co., Philadelphia and Montreal. 1955. Price $24.00.

Publication of the fruits of this work has been long awaited by abdominal surgeons. It represents data gathered by the personal exhaustive dissection of the upper abdominal viscera of 200 cadavers, in addition to information gleaned from an additional 450 bodies examined by the author and his staff. Patterns of vascular supply to these viscera are meticulously tabulated, as well as the distribution of intrahepatic and extrahepatic bile ducts in this, the first all-inclusive publication of its kind.

Details of foremost importance to the surgeon include the following: (1) the first description of 26 separate routes of collateral circulation to the liver; (2) the finding that the usually described pattern of celiac artery distribution occurred in only 64.5% of cases, with the "typical" arterial supply to the liver occurring in only 55%, 42% possessing an aberrant hepatic arterial supply; (3) the finding of the usually described origin of the cystic artery in only 63% of subjects examined, and it origin from without the cystic triangle in 20%. Multiple cystic arteries occurred in 25% of cases; (4) the demonstration that the middle or left colic arteries may arise from the celiac, and that one or more hepatic arteries may arise from the superior mesenteric artery in significant percentages of cases; (5) specific description of the blood supply of the duodenum and pancreas, emphasizing several constant, though textually unlisted arteries; (6) demonstration of the segmental components of the liver, and statistical tabulation of the varied anatomy of extrahepatic bile ducts; (7) description of the variable patterns of termination of the splenic artery; (8) complete description of blood supply of the esophagus, stomach, small intestine, and the portion of the colon supplied by the superior mesenteric artery. Adequate discussion of blood supply to the remainder of the colon is also given, including remarks pertinent to the marginal artery of Drummond and the validity of the critical point of Sudek.

The 324 page narrative text is supported by an atlas of 195 pages, containing 172 illustrations, of which 166 are in color. The text presents a detailed anatomical description, organ by organ, including consideration of developmental factors. Details of clinical application are emphasized, and key references given. A complete anatomical bibliography is accorded each section. Historical data is interestingly presented, including the role of the liver in ancient religious rites, and pertinent information concerning early attempts at surgical therapy directed at the various viscera under consideration.

The atlas is complete, and beautifully illustrated. The legends are clear and concise. Paper, print, and binding are of high grade.

This book is recommended as a text and source of reference for the surgeon, the anatomist, and the advanced student.

THOMAS W. HOLMES, JR.,
M.S. (SURG), M.D.

COMMUNICABLE DISEASES. 3rd Ed. By Franklin H. Top, M.D., M.P.H., F.A.C.P. and Collaborators. The C. V. Mosby Company, St. Louis. 1955. Price $18.50.

This book presents the clinical aspects of infectious diseases dealing with both the single patient and multiple patients composing a community. The book includes chapters on pathogenesis, diagnostic clinical and laboratory findings, management, control and prevention. Sufficient basic theoretical and laboratory facts are presented to provide the needed background.

Particularly timely are the discussions and warnings about vaccines. The recent increase in diphtheria substantiates that vaccines may provide limited protection and can decrease in effectiveness with time. The chapters presenting the chemical, pharmacological and physiological aspects of therapeutic agents should prove quite suitable for reference and refresher reading.

The diseases are discussed individually under classification based upon whether the portal of entry is the respiratory tract, gastrointestinal tract, or skin. A chapter on histoplasmosis has been appropriately added, but none is included on blastomycosis or actinomycosis; cryptococcal and toxiplasmal infections are neglected also. Viral diseases include a section on the lately recognized disease called cat-scratch fever.

The latest trend in research in infectious diseases is toward host resistance, and this subject is well presented throughout the text. A chapter organizing the facts on this subject might be a good addition, and could contribute, along with the discussion on skin tests, a summary of the means and limitations of determination and measurement of immunity. The book serves well not only as a reference for medical students but also for investigators.

GERALD R. COOPER, M.D.

KERATOPLASTY. By R. Rownley Paton, M.D., F.A.C.S., Surgeon Director, Manhattan Eye, Ear, and Throat Hospital. Clinical Professor of Ophthalmology, New York University Medical School. 280 pages; 87 figures. The Blakiston Division, McGraw-Hill Book Co., Inc., New York, Toronto, London. 1955. Price $28.50.

This beautifully illustrated book is the most up-to-date textbook on the subject of keratoplasty in any language. The history of corneal grafting is logically explained. The anatomy and physiology is efficiently taught. Dr. Paton shows great teaching ability throughout this textbook, both by choice of language and organization of the paragraphs in each chapter. Case selection is considered from the standpoint of many who have reported on this subject, and may be considered factual and timely. The history of the struggle for donor material is as complete as can be found in one textbook. Pre-operative technique, operative technique, and post-operative care are described in ample detail. Whatever is known to date about the effects of radiation and cortisone therapy on the cornea is reported. The chapter on the histology of the healing cornea might be considered superb reading for all who are interested in corneal pathology and physiology.

COL. ROLAND I. PRITIKIN, MC, USAR

TRANSPLANTATION OF TISSUES. Vol. I (Cartilage, Bone, Fascia, Tendon, Muscle). By Lyndon A. Peer, M.D., St. Barnabas Hospital, Newark, New Jersey. 415 pages, illustrated. The Williams & Wilkins Co., Baltimore. 1955. Price $13.50.

The author, as a practical surgeon and scientific investigator, has presented the subject of Tissue Transplantation in an orderly, well planned method from the primitive origin of cells to the fate of transplanted cells of cartilage, bone, fascia, tendon and muscle in both animal and man. There is an almost equal division of subject emphasis between the structure of specific tissue cells, transplantation in animals and humans, the clinical use of transplanted tissues and a résumé of the literature on each tissue covered in this volume. The format of this book is in two column, clearly readable print, with few footnotes, and many clear, well captioned photomicrographs, half tone and pen and ink illustrations. The index is well organized and reliable. The author, "after considerable thought decided to present the material in a manner designed to be readable and informative for the physician, surgeon and medical student," and he has succeeded.

CDR R. M. MUGRAGE, MC, USN

THE MANAGEMENT OF ORAL DISEASE. By Joseph L. Bernier, D.D.S., M.S., F.D.S., R.C.S. (Eng.) Colonel, Dental Corps, U.S. Army; Chief, Oral Pathology Branch, Armed Forces Inst. of Path., Prof. of Oral Pathology, Georgetown University School of Dentistry. 825 pages, 1001 illustrations, 5 color plates. C. V. Mosby Co., St. Louis. 1955. Price $15.00.

This fine new text is a confirmation of the author's well deserved reputation as one of

the leading authorities and educators in the field of oral and dental pathology.

To those who might expect the word "management" to imply emphasis upon clinical procedures the title may be misleading. The author explains its meaning in terms of broad application, "where recognition, identification and treatment are embodied in the word." Even so, coverage of treatment is occasionally omitted and in most instances is covered in little more than a cursory manner. The true value of the book lies in the fields of recognition, diagnosis, and understanding of the various diseases affecting or involving oral and related tissues.

Colonel Bernier calls largely upon a wealth of personal knowledge and experience, original work by himself and associates and upon material available to him through the Armed Forces Institute of Pathology and the Registry of Oral Pathology of the American Registry of Pathology in compiling this book. Frequent reference is also made to significant work of other individuals or groups; often this reference is in the form of direct quoting of particularly well written or important work. The Proceedings of the Workshop on Dental Caries held at the University of Michigan in 1948, the Survey of the Literature of Dental Caries prepared by the National Research Council in 1952, the report of the Committee on Classification and Nomenclature of the American Academy of Periodontology in 1954, and frequent references to the work of such as Thoma, Kerr, Cahn, Robinson and many others are examples.

As stated in the preface, "A number of the concepts presented, such as those relating to leukoplakia and the cementifying fibroma, are somewhat original." A particularly well written chapter is one on inflammation and repair, processes which are important to an understanding of disease and tissue reaction. Other timely material includes consideration of the general adaptation syndrome, a review of laboratory procedures of importance in the diagnosis of oral disease, a chapter on oral reactions in allergy and to drugs, and others.

The book is written in a concise manner, which, at the same time, is inclusive and clearly understandable; an extensive list of references is provided at the end of each chapter. Illustrations, consisting of over a thousand photographs, photomicrographs, roentgenograms and drawings, 29 of which are color photographs, are deserving of special mention. These are of consistently good quality, have been carefully selected to supplement and illustrate material covered in the text; they are arranged for convenient reference while reading that portion of the text to which they apply.

This comprehensive and authoritative volume promises to take a place alongside others which have become essential members of the basic dental library. It will no doubt also find considerable favor among students and those of the medical profession having an interest in diseases of the face, jaws and oral cavity.

Lt. Col. Russell W. Sumnicht, DC, USA

Oxygénothérapie. By Leon Binet and Madeleine Bochet, Faculty of Medicine, Paris. 180 pages. Masson & Cie, Paris. 1955. Price 1,300 Fr.

The senior author is a leading French physiologist. He has been studying oxygen therapy since the first World War, when he first came in contact with victims of gas warfare.

This comprehensive monograph written in French, brings up to date the subject of oxygen therapy. The book is divided into two parts. Part I deals with such problems as biological reactions to acute anoxia, physiological basis of oxygen therapy, oxygen therapy in emergencies, in respiratory and cardiovascular diseases, in pediatric practice, in anesthesia, and in surgery.

The authors stress the importance of oxygen therapy in first aid in industrial medicine. The chapter dealing with oxygen therapy in muscular fatigue is particularly interesting.

Part II of the book is devoted to technical matters, and deals with apparatus, masks, tents, methods of determining oxygen concentration in tents, and safety measures.

The book is written in clear style, well-printed, and easy to read. It is well illustrated. The bibliography is very complete. Unfortunately, there is no index.

The book is well worth reading, and is a valuable addition to any medical library.

J. B. Bickel, M.D.

Lectures on the Scientific Basis of Medicine. Volume Three 1953-54. British Post Graduate Medical Federation. 398 Pages, 7 Illustrations. John de Graff, Inc., New York. 1955. Price $6.00.

For the past three years the British Post Graduate Medical Federation has sponsored

an annual series of "Lectures on the Scientific Basis of Medicine." The third volume of the series contains 21 of the lectures originally delivered during the winter of 1953-54.

The subjects included are "Science and History," "Biological Synthesis," "The Genetics of Some Biochemical Abnormalities," "Tissue Repair," "The Supporting System and its Disorders," "Hemispherectomy and the Localization of Function," "Anticholinesterases," "Acetylcholine and the Maintenance of the Cardiac Rhythm," "The Growth Hormone of the Anterior Pituitary Gland," "Stress and Thyroid Activity," "The Physiological Actions of the Sex Hormones," "Acid and Alkaline Phosphatase in Disease," "Body Water Control," "Reactions to Bacterial Invasion," "Antiviral Immunity," "The Action of Bacterial Enzymes on Immunizing Antigens," "Causes of Failure in Antibiotic Therapy," "Antimalarial Drugs," "Chemotherapy of Cancer," "The Scientific Approach to Dermatology," and "Experimental Psychopathology." A complete list of all lectures given during the past three years is appended.

With the exception of Dr. Henry E. Sigerist of Yale whose lecture on Science and History is truly fascinating and erudite, all the authors are British. These discourses provide an extensive background of fundamentals of the subjects discussed and all have excellent bibliographies.

This text will have appeal primarily to internists and those who are interested in scientific research as related to clinical medicine and surgery, and to those who have attended these lectures since their inception.

This book will be a worthy addition to the shelves of medical libraries.

CAPT. JULIAN LOVE, MC, USS

DENIAL OF ILLNESS. By Edwin A. Weinstein, M.D., Associate Attending Neurologist, The Mount Sinai Hospital, New York; and Robert L. Kahn, Ph.D., Research Psychologist, Mt. Sinai Hospital, New York. 166 pages. Charles C Thomas, Springfield, Ill. 1955. Price $4.75.

This monograph sets forth in lucid style a comprehensive and systematic study of explicit verbal denial of illness (anosognosia) and the denial implicit in such phenomena as pain asymbolia, disorientation, withdrawal, reduplication, hallucinations, inattention, and mood changes. Concepts of anosognosia in the past literature have often grown from case report appraisals without control observations, repeated examinations during progression or convalescence, or detailed psychological evaluation. Also, the preponderance of hemiplegic or blind patients evidencing anosognosia by ignoring, neglecting, or denying their defects, has tended to restrict the definition to patients with the brain lesions causing such defects. In the 104 cases recorded in detail by the authors, the symptoms represented symbolic adaptive processes occurring during altered brain function, and were continuations of pre-illness ego defenses against a catastrophic anxiety mobilized by serious disease. Neurological lesions of many varieties determined the disability denied, but not the mechanism of denial. Focal electrical abnormality, or cortical lesions alone, parietal or otherwise, were insufficient to produce explicit denial. Denial could be demonstrated in lobotomized patients, in the language and thought of children, and was experimentally produced with electroshock and amytal. The authors have made possible a refreshing expansion of the body image idea from the status of a neurological peculiarity of the parietal lobe to that of dynamic function of the self in its efforts to preserve integrity. The book is an admirable contribution to medicine.

LCDR THOMAS H. LEWIS, MC, USN

SURGERY: HISTORY OF THE SECOND WORLD WAR. Edited by Sir Zachary Cope, B.A., M.D., M.S., F.R.C.S. London: Her Majesty's Stationery Office, by John Wright & Sons, Ltd., at the Stanbridge Press, Bristol. (Also British Information Services, 30 Rockefeller Plaza, New York.) Price $15.00.

This volume presents in its 772 pages a review of the surgical experiences of the British Armed Forces in World War II. It provides a documented account of surgical progress between the years 1939 and 1945. The accomplishments of the British Medical Services during those war years are legion, but the accurate recording of those surgical lessons in a single volume, available for use by future generations of aspiring young physicians, is a monumental task that deserves considerable praise.

In undertaking this herculean effort, Sir Zachary Cope has surrounded himself with a group of distinguished surgeons of far-flung experience and international reputation. They have undoubtedly reviewed countless papers and reports to emerge with

a systematic presentation of the surgery of war wounds, succinctly stated, quite adequately illustrated and completely documented.

In order to appreciate the great strides and the marked change in surgical concepts that developed during the short span of the war years, one has only to review the textbooks and surgical journals published in the late thirties. The surgical principles incorporated in this historical document are as sound today—ten years later—as they were at the end of World War II.

This volume begins with a brief introduction on Surgery in Wartime by Sir W. Heneage Ogilvie. He aptly points out that it is fallacious to think that war surgery and traumatic surgery are synonymous. On the contrary, "war surgery is traumatic surgery applied under conditions of war."

The book is then divided into treatment of wounds, transfusion of blood, shock and resuscitation, anesthesia and several chapters on specialized surgery of systems and areas of the body. The recognition of, researches on and the treatment of blast, crush syndrome, immersion foot, and the traumatic effects of the atomic bomb are covered in considerable detail.

Although this history contains a considerable amount of supporting data, case reports and tables of statistics, the context is written in a narrative style which is most interesting to read. The reviewer could not help but feel that the authors, in jotting down their portion of this history, must have recaptured momentarily the vivid reminders of their war experiences, and thus have been able to present the material in a most attached and convincing manner.

The excellent photographs in black and white and the chromatic ilustration add much to the presentation of this history of British war surgery in World War II. This compilation of surgical principles learned through years of trial and error on mangled bodies created by a world holocaust should be a never-ending source of information for the surgical resident and the surgeon interested in trauma.

COL. DOUGLAS B. KENDRICK, MC, USA

HUMAN PATHOLOGY. 8th Ed. by Howard T. Karsner, M.D., LL.D., Former Professor of Pathology, Western Reserve University; Medical Research Advisor to The Surgeon General, U. S. Navy. 960 pages, 557 illustrations in black and white and 19 subjects in color on 14 plates. J. B. Lippincott Co., Philadelphia and Montreal. 1955. Price $15.00.

This book needs no introduction to the medical profession. Since the first edition appeared in 1926, it has been one of the standard text books of pathology, popular alike with undergraduate medical students and practicing pathologists and other physicians. The author has been most diligent in keeping this book up-to-date and these conscientious revisions help account for its continued popularity.

The present edition follows the same general format of the previous one, but includes 33 additional pages. The chapter on the nervous system has undergone extensive revision under the able authorship of Webb Haymaker who appears as a contributor for the first time. Orbison and Keys have revised their chapter on the eye and Lund has largely rewritten his chapter on the skin. These are the only contributing authors. All other chapters are from Dr. Karsner's authoritative and meticulous pen.

Revisions appear in the discussions of stress, thermal injury, the effects of ionizing radiation, the effects of sound and of sudden changes in atmospheric pressure. New material appears also in the paragraph on infectious diseases, infectious granulomas, diseases of the respiratory system, and diseases of the liver. Revisions also appear in the section devoted to discussion of the pathogenesis spread and diagnosis of tumors. The anemias are reclassified in accordance with the latest concepts.

The author's lucid style, the excellent illustrations and the general format of the book all contribute to insure continued popularity of this book.

COL. HUGH R. GILMORE, JR., MC, USA

POLYCYTHEMIA. Modern Medical Monographs #13 by John H. Lawrence, M.D., D.Sc., F.A.C.P., Director, Donner Laboratory and Physician-in-Chief, Donner Pavilion, University of California, Berkeley. 136 Pages with Index. Grune & Stratton, New York, London. 1955. Price $5.50.

This monograph is based on the author's experience with 231 patients with Polycythemia Vera and 72 patients with secondary and/or relative Polycythemia. None of these conditions is common, but when the physician is confronted with an increase in the red cell count, it is of prime importance to

determine which form of Polycythemia is present. Differential therapy will depend upon the type of Polycythemia.

This disease was first described by Vaquez in 1892 and by Osler in 1903. Harrop reviewed the literature up to 1928. Since that time numerous articles have appeared describing the physiology, pathology and therapy of this disease. However, the current monograph reports the largest series to date and stresses prognosis and length of life after various forms of therapy, notably treatment since 1938 with the radioactive isotope of phosphorus, P-32.

The text is divided into three main sections: the first describes Polycythemia Vera and stresses the fact that the majority of such patients succumb to either leukemia or to hemorrhagic or thrombotic episodes. The second section consisting of three pages summarizes the significance of relative polycythemia, while the third section is devoted to a clinical and laboratory description of Secondary Polycythemia. An excellent summary appears on page 109 and is followed by typical case histories. The technique of therapy with P-32 is presented definitively.

This lucid monograph is very well written and marks a milestone in our understanding of this challenging, neoplastic-like disease of bone marrow.

CAPT. CHRISTOPHER C. SHAW, MC, USN

DOCTOR AND PATIENT. By Desmond O'Neill, M.D., M.R.C.P. (Lond.), D.P.M. (Eng.) 197 pages. J. B. Lippincott Co., Philadephia and Montreal. 1955. Price $5.00.

Dr. O'Neill, a British psychiatrist and teacher presents a theme that sick persons need to be understood by a physician who can take account of their state of mind as well as their bodily disorders.

He feels that most practising physicians come face to face with stress disorders early and frequently in their practise, perhaps in the order of 20% of the patients. Dr. O'Neill analyzes the experimental basis for physical changes in emotional states then elaborates with many examples involving most bodily systems. Emphasis is on the whole person. Complete physical examination is necessary to recognize presence of organic components.

Following this Dr. O'Neill outlines a simple therapy in which the physician acts as an "ear" and catalyst to the patient's own reactions; the function of ventilation and patient insight is emphasized.

Finally, the author states the test of recovery is that the patient can re-enter a situation which formerly had disturbed him and brought about tension and illness, and adapt to it with ease and confidence.

This book affords pleasant reading and is consistent with present day American Medical School teaching. It is practical and relies little on technical psychiatric vocabulary. It would appear to be most helpful to medical students and young practitioners.

EDMUND G. BEACHAM, M.D.

THE GENESIS AND PREVENTION OF CANCER. 2d Ed. By W. Sampson Handley, M.S., M.D. (London), F.R.C.S., Senior Consulting Surgeon to the Middlesex Hospital, London. Hon. F.A.C.S. 320 pages with 113 illustrations. The Macmillan Company, New York. 1955. Price $4.00.

This book is an exposition of the author's theory of the cause of cancer. He believes that lymphangitis and consequent lymphatic obstruction are immediate etiologic factors. Irritation, infection, chemical agents or physical agents are cancerogenic agents only in so far as they cause lymphangitis and lymphatic obstruction. He speaks particularly of cancer of the skin and breast.

The lymph stasis may act by altering cell metabolism. Anoxemia may cause " . . . the precancerous cells to change from nutrition by oxidation to nutrition by hydrolysis." The sluggish tissue current fails to bring an adequate supply of hormones and at the same time increase of intercellular pressure subjects the cells to a kind of "forced feeding." The tissue fluid becomes concentrated and has a high specific gravity. Lymphatic obstruction also interferes with removal of toxic waste products. These factors are cited as possible causes of the change from normal epithelial cells to cancer cells.

One of the author's principle arguments relates to lupus carcinoma. He states that lupus is essentially a tuberculous lymphangitis and spreads by following lymphatic channels causing obstruction of these channels, and in some cases this obstruction leads to carcinoma. Lupus carcinoma rarely disseminates and this again is attributed to lymphatic obstruction. (He fails to explain why lupus carcinoma is a comparatively uncommon complication.)

He attributes the occasional development

of malignancy in a mole to an ". . . abnormal isolation of the tissue of a mole from the lymphatic circulation" and he believes that the nevus cells arise from cells which should have produced lymphatic vessels, but which have proliferated irregularly and have failed to form the normal lymphatic network.

The author's arguments are based on clinical and histological observation without experimental support. He does cite an experiment by Professor J. W. Orr of the University of Birmingham, which he feels supports his theory. Professor Orr transferred a graft of carcinogen-treated epidermis to an untreated site on the same animal and no tumor resulted, whereas when the treated site was grafted with untreated epidermis, tumors appeared. Dr. Handley assumes that the state of the lymphatics in the dermis was responsible for the appearance or non-appearance of the tumors.

The author presents his arguments well and supports his points with good illustrations. Like many theories as to the cause of cancer, this theory fails to answer all questions. There must be many instances of chronic local lymphatic obstruction due to inflammation which fail to develop cancer. Some other explanation appears necessary.

COL. HUGH R. GILMORE, JR., MC, USA

LABORATORY IDENTIFICATION OF PATHOGENIC FUNGI SIMPLIFIED. By Elizabeth L. Hazen, Ph.D., Associate Bacteriologist (Mycology), and Frank Curtis Reed, Laboratory Illustrator and Photographer, Division of Laboratories and Research, New York State Department of Health, Albany, New York. 108 pages, 101 photographs. Charles C Thomas, Springfield, Ill. 1955. Price $5.50.

This book is intended for use as a guide in the laboratory identification of those pathogenic fungi most commonly found in North America. Included in the discussion of each organism are macroscopic and microscopic photographs, the best media to use for isolation, and a description of the colony. There are also sections giving the formula for 14 media, references to standard texts on pathogenic fungi, and both recent and original papers on the different organisms.

This book should prove to be an invaluable aid at the laboratory work bench. Both the photographs and descriptions of colonies are excellent. Omitted, however, are photomicrographs of the sexual spores of *Allescheria boydii;* discussions of Penicillium, Aspergillus, and Mucor species as occasional pathogens; and a discussion and photomicrograph of *Malassezia furfur,* the organism generally conceded to be the one present in skin scrapings from cases of Tinea versicolor.

MAJOR ARTHUR NEWTON, MSC, USAR

HANDBOOKS FOR THE GENERAL PRACTITIONER, PRACTICAL ENDOCRINOLOGY. By Lewis M. Hurxthal, M.D., Head of Department of Internal Medicine, Lahey Clinic, in cooperation with A. Seymour Parker, M.D., Physician, Department of Internal Medicine, Lahey Clinic, and Hirsh Sulkowitch, M.D., Research Associate, Lahey Foundation,New York. 318 pages. The Blakiston Division, McGraw-Hill Book Co., New York. Price $7.00.

This is the first volume of a series of ten "Handbooks for the General Practitioner." As the caption indicates, the set is contemplated as a quick, ready reference to the latest development in the diagnosis and therapy of diseases confronting the general practitioner. This volume covers the field of Endocrinology. The material is presented in eleven chapters covering the glandular and associated conditions commonly falling in the general category of endocrinology. As stated in the preface, diabetes is not included in this treatise. A separate volume is to be devoted to this disease.

The reader is introduced to this work by an excellent discourse on the "Endocrine Disorders of Infancy and Childhood." This is followed by five chapters devoted to the diagnosis and therapy of the diseases of the Pituitary, the Thyroid, the Parathyroid, the Adrenal Glands and the Gonads. A brief, concise discussion covering Hyperinsulinism, Islet Cell Tumors, Hypoglycemia, and Hyperglycemia follows the discussion of the diseases of the specific glands. The two chapters devoted to "Gynecomastia" and "Hirsutism and Procedures for Investigation" should prove of interest to the practitioner. Hirsutism has usually been the cause of considerable concern both to the patient as well as the physician since the etiology not infrequently remains obscure in the absence of extensive studies. The procedural outline for the survey is clearly presented in simple logical steps.

Twenty-seven pages are devoted to the discussion of "Steroid and other Hormones in General Practice." This might well be read

by every physician contemplating launching into the field of steroid and hormonal therapy in his practice. The final chapter of the text consists of a series of "Office Laboratory Tests" commonly used in the study of the endocrinological conditions. An eight page double column index is found at the end of the volume.

In summary this handbook covers the field of endocrinology as ordinarily encountered in the office of the general practitioner. The material is up-to-date, shorn free of controversial elements. Photographs illustrating the effect of Endocrine abnormalities on facies and other anatomical regions before and after therapy amplify the work. There is a noted absence of graphs and complicated tables usually found in medical texts. This is as it should be since this treatise is limited largely to diagnosis and therapeutic management. This work should prove most valuable to the busy general practitioner as a concise but practical reference to the management of these diseases.

COL. CHARLES R. MUELLER, U.S.A. RET.

A SHORT HISTORY OF MEDICINE. By Erwin H. Ackerknecht. 258 pages. Ronald Press, New York. 1955. Price $4.50.

There has long been a need for a concise yet adequate account of the history of medicine suitable for students, medical men and also the non-professional reader. Such a short history is now here. The author is Professor of the History of Medicine at the University of Wisconsin School of Medicine which is a guarantee of the soundness of the text. The book, however, happily is neither dull nor pedantic—it is in fact written in a pleasing style by a master who knows the art of talking to his students, not at them.

In twenty chapters the broad canvas of memedical history from paleopathology and paleomedicine to modern times is presented not as a mere catalog of who did what, when, but as a pageant of living history against a background of social and cultural developments. The author makes the past live by continually demonstrating its relevance to the present.

No one can make an intelligent guess as to the future of medicine unless he has some knowledge of its past. To this knowledge, Dr. Ackerknecht's book provides a most excellent introduction. A well selected reading list at the end provides a basis for further study.

MERRIS C. LEIKIND

NEW BOOKS

The Relief of Symptoms, by Walter Modell, M.D., F.A.C.P., W. B. Saunders Co., Philadelphia, Pa. Price $8.00.

Rheumatoid Arthritis and Psoriasis Vulgaris, by Tibor Benedek, M.D. Chicago Medical Book Co., Chicago 12, Ill.

The Lacrimal System, Clinical Application, by Everett R. Veirs, M.D. Grune & Stratton, Inc., New York, N.Y. Price $7.50.

Medical Support of the Army Air Forces in World War II. Supt. of Documents, Government Printing Office, Washington, D.C. Price $7.00.

Medical Emergencies, by Dr. Francis D. Murphy. F. A. Davis Co., Philadelphia, Pa. Price $7.50.

Assault Battle Drill, by Maj. Gen. J. C. Fry. The Military Service Publishing Co., Harrisburg, Pa. Price $2.00.

Of Research People, by George E. Burch, M.D., F.A.C.P. Grune & Stratton, New York, N.Y.

The Art of Knotting and Splicing, by Cyrus Lawrence Day, 2nd ed. U. S. Naval Institute, Annapolis, Md. Price $5.00.

Cardiovascular Surgery, edited by Conrad R. Lam, M.D. W. B. Saunders Co., Philadelphia, Pa. Price $12.75.

Medical Research: A Midcentury Survey (2 volumes), Little, Brown & Co., Boston, Mass. Price $15.00.

The Treatment of Renal Failure, by John P. Merrill, M.D. Grune & Stratton, Inc., New York, N.Y. Price $6.75.

Rehabilitation of a Child's Eyes, by Richard G. Scobee, B.A., M.D. Revised by Herbert M. Katzin, M.D., 2d ed. The C. V. Mosby Co., St. Louis, Mo. Price $2.85.

War-Diary of an Army Psychiatrist, by Merrill Moore, M.D. Contemporary Poetry, Baltimore 10, Md. Price $3.00.

Textbook of Clinical Pathology, 5th ed., edited by Seward E. Miller, MC, The Williams & Wilkins Co., Baltimore, Md. Price $11.00.

Hand Surgery in World War II, edited by Sterling Bunnell, M.D. Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Price $3.75 (Buckram).